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RAI BAHADUR KISHEN SINGH MILAMWAL.

SURVEY OF INDIA.

THE "A-K" OF TIBETAN EXPLORATION.

1869-83.

Photography—Survey of India Office, 1917.



# RECORDS OF THE SURVEY OF INDIA

Volume VIII (in two parts): Part II.

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## EXPLORATION IN TIBET AND NEIGHBOURING REGIONS 1879-1892.

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PREPARED UNDER THE DIRECTION OF  
Colonel Sir S. G. BURRARD, K. C. S. I., R. E., F. R. S.  
Surveyor General of India



DEHRA DUN  
PRINTED AT THE OFFICE OF THE TRIGONOMETRICAL SURVEY  
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## P R E F A C E .

The reports published in these volumes are not new: they are reprints of former publications. They have been republished in this new form partly because many of the old publications are now out of print and are not obtainable, and partly because the old publications are spread and scattered over numerous annual departmental and other reports and have never before been presented together in one collected whole.

G. P. LENOX CONYNGHAM,

Dehra Dun: } COLONEL, R. E.,  
22nd February, 1916. } *Superintendent of the Trigonometrical Survey.*



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*Report of Pandit Kishen Singh's Explorations*

in

*Great Tibet and Mongolia, 1879-82*

by

J. B. N. Hennessey, Esq., M.A., F.R.S.

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*Summary and Discussion.*

The exploration was designed by General J. T. Walker, C.B., R.E., Surveyor General of India and Superintendent of the Trigonometrical Survey, who despatched the party from India on its undertaking in April 1878, and, when near the close of his own official career, welcomed its return to this country about the end of 1882: he also shortly after presented a preliminary account of the exploration to the Asiatic Society of Bengal.\* The explorer and all his observations having been placed at my disposal by General Walker in view to translating, reducing, compiling and otherwise preparing the work for publication, I now submit the results, under the orders of Colonel G. C. DePrée, Surveyor General of India, together with this summary and discussion of them.

2. Before entering on the notes which follow, it is necessary that I should call attention to a mistake committed in the projection of the original Sketch Map (published January 1884) by which the northern portions of that publication were displaced considerably *west* in longitude, so as to necessitate issue of the *Revised* Sketch Map accompanying. There are thus two editions of the map, *i.e.*,

(I) Sketch Map published January 1884 now *superseded*.

(II) *Revised* Sketch Map now published to take the place of (I).

The mistake committed in the *superseded* map was, that the adopted magnetic variation of  $2\frac{1}{2}^{\circ}$  *east* was erroneously laid off as  $2\frac{1}{2}^{\circ}$  *west*, and it was only in course of writing these notes that this unexpected mistake was discovered. Now, as the exploration under notice extends *north* to an exceptional distance, *i. e.*, to no less than some 750 miles from origin, it will be obvious that the mistake must create a *growing* and *considerable* displacement, chiefly longitudinal, in proceeding northwards, much too large for elimination, without great inconvenience and risk of error, by reckonings made as occasion may require on the *superseded* map itself: hence the necessity for issuing the present *Revised* Sketch Map†, which while superseding its predecessor differs from it as said almost exclusively in longitude and only along the two branches northward, *i. e.*, from Lhāsa and Ta-chien-lu; the differences are necessarily *variable* in magnitude. In all other respects, the *superseded* and *revised* maps were prepared on the same basis and principle as hereafter described; and it may be now stated once for all, that the "Map" or "Sketch Map" of Pandit Kishen Singh's explorations hereafter referred to, is always to be understood as the *revised* and not the *superseded* edition.

3. It will be seen from the Index, that the routes followed make up what may be called a triangle, of which the three points are Lhāsa (lat.  $29^{\circ} 39'$ , long.  $91^{\circ} 5\frac{1}{2}'$ ), Chakangnamaga (lat.  $37^{\circ} 4'$ , long.  $96^{\circ} 30'$ ) and Ta-chien-lu (lat.  $30^{\circ} 8'$ , long.  $102^{\circ} 14'$ ); and the sides (or flanks) may be generally described as western, eastern and southern, having a branch from Chakangnamaga north-westerly to the town of Sachu or Saitu. The route as actually followed began at Lhāsa, of which the position was already fixed by previous explorations, and proceeded along the western flank to Chakangnamaga, from whence it was continued to Sachu; retracing his steps to Chakangnamaga, the explorer now came down the eastern flank to Ta-chien-lu, and then travelled along the southern flank with the intention first of crossing into British Assam from Sama, and, when foiled in this endeavour, of closing on his origin at Lhāsa; but being hindered also in the latter purpose, he avoided revisiting Lhāsa and equally secured his object by closing

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\* At the monthly meeting of the Society on 6th December 1883.

† It will be seen that a similar azimuthal rotation appears between Prejevalsky's two exhibits; hence his map in "Mongolia . . . translated by E. D. Morgan" agrees sufficiently with the *superseded* issue of Pandit Kishen Singh's map; while the map of Prejevalsky's work in *Petermanns Mittheilungen* July 1883, is fairly in accord with the *revised* map of the Pandit's explorations. I do not mean to imply that the alteration in Prejevalsky's maps is due to mistake; in all probability it is the outcome of improved data.

on another place some 47 miles south-east of that town also previously fixed, *i. e.*, Tsetang on the Tsang-po river; from thence he continued his traverse along the river for about 68 miles to Kam-pa-par-tse, but practically, the great triangle of his route originates from Lhāsa and closes at Tsetang. The geographical coordinates of these points adopted in the Sketch Map are as follows:—

## LHASA.

			° ' "	
Latitude	{	Observed by Pandit Nain Singh in 1874	...	29 39 23
		„ by Pandit Kishen Singh in 1879, <i>vide</i> Table I	...	39 0
		Mean	...	29 39 12
Longitude, from previous explorations by Pandit Nain Singh				91 5 30

. . (i)

## TSETANG.

From previous explorations by Pandit Nain Singh, lat.  $29^{\circ} 15' 0''$ , long  $91^{\circ} 43' 25''$  . . . (ii)

the values (i) and (ii) are those on which the great route triangle has been adjusted, as hereafter described.

4. The instrumental equipment consisted of a sextant, of some 9 inches radius, which was used, with the aid of reflections from mercury, for all latitude observations: for *distant* bearings along the route a prismatic compass was employed, a small pocket compass doing duty for minor bearings, as those of tributaries to rivers, ranges of hills and the like: of thermometers there were two of the kind especially graduated for using in boiling water and two others for air temperatures: an aneroid barometer was also provided, but it soon became erroneous and proved useless. The instruments employed were all tested both before departure and on return of the expedition, with satisfactory results. For linear measurement the explorer trusted entirely to his own pace or step, which as hereafter shown is convertible into the unit of a foot or any other unit desired; and notwithstanding that in Mongolia he was looked down upon as a particularly inferior individual, because unlike the Mongols he persisted in walking instead of following the universal custom of the country which enjoins riding a horse on all possible occasions, he yet manfully strode along his travels, pleading poverty or otherwise, until at last on his return journey, along the eastern flank of his route, the Lama with whom he had taken service insisted on his riding, if only to promote flight from robbers, especially the mounted bands of the *Chiāmo-Goloks* of whom travellers are in constant dread. Thus compelled, the explorer mounted a horse, but here also he proved equal to the occasion, for he at once set to work counting the beast's paces as indicated by his stepping with the right foreleg: in this way he reckoned his distances for nearly 280 miles between Baron Tsaidam (lat.  $36^{\circ} 5'$ , long.  $97^{\circ} 3'$ ) and Thuden Gom-pa (lat.  $33^{\circ} 17'$ , long.  $96^{\circ} 48'$ ), and the results do credit alike to the explorer's ingenuity and to the horse's equability of pace.

5. It is desirable to mention certain details in connection with the observations for latitude, which were made as usual by measuring the altitude (*i. e.* double) of the sun or a star when on the meridian; the procedure more exactly stated being this. Having arrived at a suitable place for observing latitude, the explorer's first care was to fix on some prominent distant terrestrial object exactly *south of his station*; this he did during daylight with his *prismatic compass*, so that knowing his (magnetic) meridian he was able to commence measuring the altitude *before* the object culminated and to note the *maximum* altitude with certainty: in fact the preliminary step of finding his meridian was absolutely necessary. Further he *invariably* compared, by eye, the azimuthal direction of the star, when culminating, with that of his meridional object, and he is confident that these two directions never disagreed sensibly: when questioned more exactly, he affirms without hesitation that the difference, if any, could not have exceeded  $5^{\circ}$  at most, and he has certainly had many years of practice and has taken thousands of bearings, so that he has an intuitive cognition of the north point *at all times* as I have practically ascertained. It will thus be seen, that his procedure in taking latitude observations, indirectly but certainly, also afforded, to some extent, conclusive evidence, that the variation of his compass (by which all his traverse bearings were taken) was never gross in amount, nor did it change greatly throughout all his travels.

6. As regards the construction of the Sketch Map, the principle of procedure will be understood from the following. Suppose a route (or traverse) beginning at a fixed station L

and after passing through stations A, B, . . . K (at each of which the latitude has been observed) to return and close on L. Then accepting some convenient approximate relation, as 2,000 paces = 1 mile, and adopting as usual for the promotion of accuracy a *larger* scale than that intended for publication, each section between latitude stations should be plotted separately by itself in the ordinary way by bearings and paces: it is these separate sectional plots which have next to be adjusted so as to form the circuit, and this adjustment should be done on another and *sufficiently large* sheet of paper (for the map) to hold *all* the sections. On this map paper draw the ordinary graticule of latitudes and longitudes to the adopted scale; also draw the particular parallels of latitude observed at A, B, . . . K, which may be understood by (a), (b), . . . (k) respectively, and plot L by its known coordinates. Now take the sectional plot L A, on which measure with a pair of compasses, in inches, the meridional distance or  $m$  and the longitudinal distance or  $l$  between L and A: also on the map, measure similarly the meridional distance between the parallels of L and A which call  $m_p$ , then the longitudinal distance between these two stations on the map, or  $l_p$ , will be found (sufficiently approximately for such work) from

$$l_p = \frac{l}{m} m_p \quad . . . . . (iii)$$

hence lay off  $l_p$ , east or west of the meridian of L, on the parallel (a), and this will fix A on the map. Similarly proceed consecutively with the remaining sections A B, B C, &c., until arrival at K, it being borne in mind that this procedure is most suitable so long as the meridional departure between the two stations (as L and A) is not small; and this may be seen at once by supposing that A and L are on the *same* parallel, when  $m_p = 0$  and the method fails. The procedure described may also be briefly stated thus: suppose that  $\theta_a$  is the line from L indicating the bearing of A; then the position of A, is that point on (a) where  $\theta_a$  cuts (a): thus the longitude of A depends on equability of pacing, on the accuracy of the needle including its adopted magnetic variation and the correctness of the observed latitude. In the present explorations the magnetic variation of the needle has been assumed constant throughout at  $2\frac{1}{2}^\circ$  E. as already stated.\*

7. Having determined K on the map, the case now presented differs from the preceding ones, because both L and K are fixed in latitude as well as in longitude; so that, to fit in the sectional plot K L we need only make those points *on that plot* superpose the required positions *on the map*; but this would disregard errors in the position of K, besides that the circuit error would not be exhibited. For the latter purpose, we maintain on the map the required direction by the plot, and on this direction lay off the *map*-distance K L, giving a position (say)  $L_k$  instead of L: the difference between these two points is a measure of the circuit error, which may be dispersed right round the traverse if required.

8. Returning now to the Sketch Map under discussion; its skeleton route was adjusted in the manner already explained. The given fixed points were Lhāsa and Tsetang, as stated in para. 3. With respect to latitudes, observations were taken at 22 stations including Lhāsa; the value of the latter employed, being that given in (i): also including Ta-chien-lu, where the explorer being doubtful of his value from a single observation, the following was adopted instead:—

Ta-chien-lu, from Du Halde's Atlas of China	Latitude.
"Province XI, Ssū-Chuan" (Jesuit Fathers, 1714)	... $30^\circ 8' 24''$ . . (iv)

Again, Prejevalsky's route, Koko Nor to Di Chu Rab Dun, crosses the explorer's traverse at Jun, where the latitude not having been observed by the latter, the value given by the former was adopted, *viz*:—

Jun	Latitude.
... ..	... $36^\circ 16' 1''$ † . . (v)

Lastly, in absence of observation by P. Kishen Singh, the following observed value was taken from previous explorations

Archa lake by Nem Singh	Latitude.
... ..	... $30^\circ 37'$ . . (vi)

\* I am aware that Prejevalsky gives the magnetic variation at Di Chu Rab Dun as  $-3^\circ 58'9''$  or say  $4^\circ$  E. (Mongolia, Vol. II, p. 308): this is too large for the southern portions of the explorer's work, and on the whole  $2\frac{1}{2}^\circ$  E. adopted as an average appears most suitable. Schlagintweit gives the variation as  $2^\circ 48'0''$  E. at Darjeeling and as  $2^\circ 30'5''$  E. at Tonglu in Sikkim (Vol. I, p. 461). The explorer's prismatic compass has recently been tested at Darjeeling generally, and its variation found to be about  $2^\circ 40'$  E.

† *Mongolia*: Lieut.-Col. N. Prejevalsky, translated by E. D. Morgan, with Introduction by Colonel Yule, C.B., 1876. Vol. II, page 308.

Thus, apart from the known points Lhāsa and Tsetang, the route triangle on the Sketch Map has been adjusted on 21 latitude stations: the circuit test was made for convenience at Archa lake, where the point as fixed by the traverse coming round by Ta-chien-lu (from the east) as compared with its position determined from Tsetang (west) was only about  $9\frac{1}{2}$  miles *south* in latitude and some  $2\frac{1}{2}$  miles *west* in longitude\*: these results are highly creditable to the explorer's accuracy and skill; the more so when it is remembered, that the entire circuit Lhāsa to Gobi, thence down to Ta-chien-lu and *viā* Sama, &c., to Tsetang is full 2,400 miles in length.

9. As regards the branch from the latitude station Sukhai to the town of Sachu; the section to Yembi latitude station was adjusted as already explained, and the average foot-value of pace thus derived was used for the continuation onwards to Sachu of only some 90 miles.

10. The longitudes of the Sketch Map in all cases depend solely on the explorer's operations, and as usual are reckoned from Greenwich.

11. The skeleton route having been adjusted as described in the foregoing, the work by the explorer may be compared with that by preceding explorers, as follows.

12. First from the map of Prejevalsky's work in the *Mitteilungen* for July 1883 and that of the Pandit's explorations, we obtain as follows:—

Point	Prejevalsky		P. Kishen Singh		P. Kishen Singh minus Prejevalsky	
	Lat.	Long.	Lat.	Long.	Lat.	Long.
Crossing P† ...	32° 12'	92° 5'	32° 10'	92° 12'	— 2'	+ 7'
Jun ...	36 16	96 39	36 16	96 47	0	+ 8
Hoiduthara ...	37 19	96 18	37 21	96 27	+ 2	+ 9
Ikhe Tsaidam ...	37 56	94 56	37 52	94 40	— 4	— 16
Yembi ...	39 3	94 2	38 58	93 28	— 5	— 34
Sachu (α) ...	40 8	94 30§	40 12	94 2	+ 4	— 28

} . (vii)

There are also two other values for Sachu which may be mentioned here, *viz*:—

#### SACHU.

	Latitude.	Longitude.	
By Herr L. de Loczyn† ...	40° 5'	95° 0'	
„ the Jesuit Fathers (1711) Du Halde's Atlas of China	(b) 40 24	94 41	} . . . (viii)
	(c) 40 22	95 37	

Returning to (vii), but little need be said of the latitudes unless to point out that they agree fairly well in all cases, as was to be expected: for this element is readily determined within small limits, and the errors at different places are independent of one another. But as respects longitudes, the case is widely different: notwithstanding, the agreements are sufficiently satisfactory, and in fact are even good if we consider the limited means available, at least to the Pandit; and further, that the two explorations have quite independent and widely different origins, one far north and the other far south.

\* In the *Précis* of these explorations, given in the "General Report on the Operations of the Survey of India 1882-83," page 40, article 206, I stated on wrong information that the values in question were  $1\frac{1}{2}$  and  $1\frac{1}{2}$  miles respectively.

† This point is intended to indicate the crossing by the *kāfla* track of the Saung Chu, or Prejevalsky's Ssan-tschu, believed to be common to the two maps.

(α) The Pandit estimates the height of Sachu above sea-level at some 6,000 feet.

§ This value is *not* taken from the *Mitteilungen*, but from a letter received from General J. T. Walker, C.B., B.E., F.R.S., to whom it was communicated I believe by Herr L. de Loczyn, as the result by Prejevalsky.

‡ A member of Count Szechenyi's Mission from China to Tibet, communicated to me by General J. T. Walker, C.B., R.E., F.R.S.

(b) Taken from "Fourth Sheet of Chinese Tartary" which the Editor remarks "differs widely from the First Sheet of Tibet and seems to be copied with less care."

(c) Taken from "The First Sheet included in the map of Tibet" on which the Editor remarks "The country has been exhibited already in the Fourth Sheet of Chinese Tartary, which seems to have been copied from an incorrect draught, or with little care."



13. Next, following the explorer's route from Jun (south-easterly) we arrive at Ta-chien-lu (furthest east) which is the next point for comparison; the latitude adopted is that by the Jesuit Fathers (article 8. iv), but the longitude is practically quite independently fixed by the explorer: here we have Gill's map\* to compare with, and *all* the values to be contrasted are these:—

## TA-CHIEN-LU.

By Pandit Kishen Singh, adopting the value of latitude by the Jesuit Fathers ( <i>see</i> iv)	...	Latitude. 30° 8'	Longitude. 102° 14'	} . . (ix)
„ Captain Gill*	...	30 4	102 21	
„ Jesuit Fathers†	...	30 8	101 49	

here Gill's and the Pandit's determinations are perfectly independent, yet they agree within only 4 miles of latitude and but 7 miles‡ of longitude, notwithstanding that the Pandit's values are the outcome of his traverse from Lhāsa up to Sukhai northwards and down to Ta-chien-lu; in all some 1,440 miles. As to the Jesuit Fathers, their ancient determinations of longitude in Du Halde's Atlas are naturally inconsistent and unreliable to a very large extent.

14. From Ta-chien-lu to Ba-tang, Gill and Pandit Kishen Singh followed the same route, and the agreement of their independent delineations, *even in details*, it will be found, is very close: at Nāg Chu Kha the scale shows no difference whatever: at Ba-tang, the following are the numerical values comparable.

## BA-TANG.

		Latitude.	Longitude.	
By Pandit Kishen Singh	...	30° 0'	99° 33'	} . . . . . (x)
„ Captain Gill	...	29 54	99 28	

here the differences are only 6 miles in latitude and but 5 miles in longitude.

15. The next point of comparison is Sama, where the two sets of perfectly independent numerical values are as follows:—

## SAMA.

		Latitude.	Longitude.	
By Pandit Kishen Singh	...	28° 7'	97° 12'	} . . . . . (xi)
„ Captain Wilcox§	...	28 2	97 8	

here again the differences are only some 5 miles in latitude and 9 in longitude.

16. And in addition the explorer's work is also checked in circuit as stated in article 8.

17. These verifications sufficiently prove the accuracy of the explorer's operations which are excellent of their kind, and are fully equal to what may be expected from the means of surveying at his disposal and the enormous extent of his traverse.

18. Now following the explorer in his travels I take Lhāsa as the origin, because previous explorations have already dealt with the country south and west of that city, and proceed to summarize and discuss portions of the detailed account of travels, giving in addition some few items now elicited in course of conversation with Pandit Kishen Singh.

19. Approaching Lhāsa from the west along the Dre-phung road (*see plan* of Lhāsa), the view in advance presents Po-ta-la to the left (or north) and Chiākpori to the right (or south) as by far the most prominent objects, raised, especially in the former case, well above the

\* See his route map given in the Journal of the Royal Geographical Society, Vol. XLVIII of 1878.

† See Du Halde's Atlas of China "Province XI, Ssu-Chuan" (Jesuit Fathers, 1714).

‡ In reality 3 miles should probably be deducted from these 7 miles, leaving only 4 miles of difference, because of initial error in the old value of longitude for India.

§ "Map of the countries lying between the 21½° and 29½° N. latitude and 90° and 98° E. longitude, shewing the sources of the Irrawaddy river and the eastern branches of the Brahmaputra, comprising Assam, Manipur, the hilly districts of the Singphos, part of Sham and of the Chinese Provinces of Yunnan and Tibet."

foliage, which is not too plentifully interspersed between, of moderate sized walnut, willow, apricot and other trees. Still further south the Kyi Chu river flanks the city running past from east to west in a deep and moderately rapid stream, some 200 feet wide, with banks gradually sloping down to the water's edge; in fact Lhāsa is situated in the Kyi Chu valley, which is here some 4 or 5 miles wide. The two prominent objects mentioned are on hillocks, rising some 300 feet above the Dre-phung road which passes between them. Chiākpori, of some three stories or floors, stands on the right-hand of the road; it includes a school for instruction in the use of medicines, of such young *Dabas* as evince predilection for the art, and in addition various medicines themselves are compounded on the premises from drugs imported or otherwise, and prepared, it is said, according to recipes obtained from Hindustān. Po-ta-la further west and to the left presents an enormous pile of lofty buildings, covering a rectangle of about 400 yards in length by some 200 yards in width, surmounted at intervals by five gilded *Gebis*\*, which sparkling in the sunlight present a dazzling and gorgeous spectacle visible for miles around. This celebrated monastery is not only the residence of the Great Lamas (Da Lama†) or chief priests of the Buddhists spread over Great Tibet and Mongolia, but it contains the remains of all the Da Lama‡ deceased for centuries past. The buildings form one solid block, rising to various heights at different places, representing sometimes so many as seven stories or floors: they contain various images which need not be alluded to here, excepting the monster image to the god *Jamba*. This monster image is represented as of prodigious dimensions; the figure is internally of clay, and is well gilded externally: it is seated on a platform on the ground floor, and its body, passing successively through the second and third floors, terminates in a jewelled and capped monster head above the latter floor; in all, the figure and platform are said to be 70 or 80 feet high. Now the essential feature in Tibetan worship is the performance of circuits around an image§: this is also recognised in the use of the so-called prayer wheel|| by which the transcribed prayers are made to circumscribe: but the circuit may obviously be made in two directions, i.e., with the hands of a watch, and this is the rule with far the majority who are known as *Nangbas*, or contrary to watch hands and this is the condition observed by a small sect of Tibetans called *Baimbus* (*Pembos*). Applying the required process to the case of the monster image of *Jamba*, it will be seen that the pilgrim is compelled by circumstances to perform three different series of circumambulations on as many floors, at first around the god's legs, next around his chest, and lastly around his head.

20. As to the Da Lama, never dying yet being successively buried and born ¶ anew, he is installed in Po-ta-la so veritable an infant that his mother necessarily accompanies in order to suckle him; but being debarred from the sacred premises of the Po-ta-la on account of her sex she is lodged in the vicinity at Shyo, and is permitted to visit her son only between the hours of 9 A.M. and 4 P.M. Whatever accomplishments he may acquire, the Da Lama never needs to exhibit them, for he is taught to be chary of speech, and indeed necessity compels this course, since his worshippers are in thousands, and it is only to those who are wealthy or of high degree that he can afford to address even a brief sentence or two: this is always done in a deep hoarse voice acquired by training, in order to convey the idea that it emanates from maturity and wisdom. Seated cross-legged on a platform some 6 feet high, he is dressed to be worshipped in the usual colors of the priesthood, i.e., red and yellow, and with bare arms, as required of all Buddhist priests, and holds a rod from the end of which hang strips of silk white, red, yellow, green and blue. The pilgrim coming in at the entrance door, advances with folded hands as if in prayer, and resting his head against the edge of the platform above him, mentally and hastily repeats the petitions he would have granted. These unuttered prayers the Da Lama is understood to comprehend intuitively; he touches the pilgrim's head with the bunch of silk in token of his blessing, and the worshipper is hurried out at the exit door by attendants, only too happy if he has passed say half a minute in the vicinity of the great

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\* *Gebis* are erected on the roofs of buildings which contain images for worship, and outwardly serve to indicate the presence of the latter. A *Gebi* is shaped like a square tent with a single pole, and in section the sloping sides first curve gracefully inwards and then widen towards the base, which varies in length up to some 30 feet, the corners of the square being ornamented each with the figure of a tiger. The frame for a *Gebi* is made of wood which is covered with metal plates and these are coated with gold; each structure is surmounted by a golden *kalas*.

† Da Lama (Chinese) or Kiāmkuṅ Ring-bo-che (Tibetan): the proper name of the present incumbent is Thuden Giamcho.

‡ These are buried in coffins within the buildings of Po-ta-la, and the sites are marked by structures called *Kutungs*: the holiness of a Da Lama is estimated in proportion to the shrinkage of his body after death.

§ Not peculiar to Tibet only: such circumambulation is also required in parts of Hindustān, and in the case of the shrine at Kālinjar Fort (Bundelkhand), the pilgrim is compelled to perform circumrotation somehow, for he is obliged to go round pillars standing in water which is deep.

|| Or *Khorlo* or *Mani* or *Thugje Chemo*.

¶ He may be born anywhere: the distant villages of Gada (S.W. of Ta-chien-lu) and Li-tang have each produced a Da Lama. The spirit of the deceased Da Lama is supposed to transmigrate into his baby successor and hence the former is said never to die.

priest.\* This is the common procedure. Persons of rank or substance are permitted to mount the platform and to perform obeisance there, receiving the required blessing by actual touch of the Da Lama's hands; subsequently such worshipper may be allowed a seat below the platform where a few hoarse utterances of enquiry may be addressed to him by the Da Lama, and he may also be given some food.

21. Passing onwards along the Dre-phung road and on approaching the Yutok Jampa, the traveller sees the two monasteries†, Chumuling and Tankyāling, on his left, and on his right, the residence of the two Chinese Ambāns. Before him lies the town of Lhāsa, and even here the dwelling houses are interspersed with religious edifices: of the latter, the most prominent on the right is the handsome temple of *Jhio*‡ glittering with four *Gebis*, while to the left is *Giāng Bunmoche* surmounted by its gilded spire, crescent and globe, and still further north, *Rāmoche*, a temple capped by a single glistening *Gebi*. Between these objects and almost in contact with them, lies the lay city of Lhāsa, composed of houses two or three stories high, touching one another and crowded everywhere by Tibetans (*Bodpas* and *Khāmpas* far in the majority), Chinese, Nepālese, Kashmīris (including a few Muhammadans from Hindustān, chiefly from Patna) and Mongolians. Of all these nationalities, the Tibetans, or natives of the country, alone have their women with them, excepting a few instances of travelling Mongolians who may be accompanied by their wives between the arrivals and departures of *kāfilas*. This part of Lhāsa, or the city proper, covers an area of less than half a square mile. The houses are built two or three stories high and mostly in blocks, around a quadrangle which is open above and is entered by a side doorway: as said, they touch one another and are crowded with occupants who live peaceably in contiguous dwellings, differences of race and customs notwithstanding: the roofs are all covered in with earth, and this is a sufficient protection against the small rainfall which comes down mostly in July and August. The city at all times contains a large number of traders with goods from various directions including Hindustān: the article most largely imported is tea, which is brought almost exclusively from China, and is always made up in the form of bricks: manufactures in Lhāsa itself are few and only small in amount, the curing of skins being about the most important: there is also a fragrant slow-match, called *Poi*, made here solely by the *Dabas* or priests: it emits a perfume in burning and is in common use by rich and poor alike. The water for the city is brought down from the north in two canals (*see* plan of Lhāsa) which however in their progress through the city are subdivided into many streamlets: these rills feed several shallow wells for the use of the people and eventually discharge their surplus to the south at Yutok Jampa, where, the explorer adds with emphasis, the water is no longer nice.

22. Polyandry still prevails, and though greatly decreased in Lhāsa (and other cities), it yet gives rise to a large unmarried surplus of Tibetan women, who are taken as concubines by the men of all the other nationalities, whether residents or even passing travellers§. The outcome of this order of things is, that for the time at least, practically (nearly) all men are Tibetans: they eat and drink in common, meeting in *Sākhāngs* (hotels) or in one another's houses; there are about 12 *Sākhāngs* in Lhāsa, and their number is on the increase; they were first introduced into the city by the Chinese, and are now so generally used, that some of them dine a couple of hundred people at one time. Thus it will be seen the Tibetans, nationalized and proper, in Lhāsa, form one large society and are uncommonly social and jovial: they drink a fermented liquor; in fact from the baby upwards one and all drink but are never, or very rarely indeed, drunk; nor are the priesthood exceptions, subject only to the condition that they may not drink within a *Gom-pa*, at least not openly. The social gatherings are enlivened by musical performances on the flute and a kind of guitar with bell accompaniment; to this the men and women combined dance or keep time, standing in rows on planks which act as sounding boards, and stamping in unison, now in quick now in slow measure: it is very pleasant to hear says the explorer. On great occasions the *Ache Lhāmo* are called in and the audience entertained with a theatrical performance. Finally in the summer months, when the air is mellow and the evenings lengthen, the people picnic under the trees the whole day long.

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\* Every pilgrim is bound to present as an offering a piece of cloth, called *Khatak*, specially prepared for the purpose, either of silk or of the bark of trees, varying in size from a few inches to something like a yard square. There are of course no objections to his presenting any amount of offerings in any other shape, the precious metals being considered a convenient form.

† It may be noted that nunneries or *Ani Gom-pas*, are not unknown though little seen or heard of, because they are always placed in secluded localities: there is an *Ani Gom-pa* some four miles north of Lhāsa for the daughters of gentle folk; other nunneries open to all, are dotted widely apart all over Tibet, but there are none in Mongolia.

‡ This temple is considered of the highest order of sanctity, so much so that the primary object of the majority of pilgrims is to circumambulate *Jhio*, which is moreover accessible at all times to rich and poor alike.

§ The illegitimate children thus begotten, if sons, are commonly admitted into the priesthood which excludes none but the sons of butchers, blacksmiths and murderers. The descendant of a Chinaman by a Tibetan woman is called a *Koko*.

23. Notwithstanding their social tendencies, the citizens manage to pick up a comfortable living, chiefly by trade, and besides to observe the requirements which residence in the holy city imposes. Lhāsa, it will be seen by the plan, is encircled by a road; this is broad and well made and defines the limits within which all those must reside who wish to make *sure* of a happy state hereafter. This road is called the Ling Khor; within its circuit no blood may be shed, and so the butchers and slaughter-houses are placed without. Now the day is recognized as begun, when a loud report, as if from a cannon, issues from the vicinity of the Ambān's residence: this happens about 4 A.M. and also at 9 or 10 P.M. After the morning report, the people are to be seen in dense crowds on the Ling Khor, *all moving in one and the same direction*, and with the hands of a watch as laid down by their religion. A similar circuit is made by the devout in the evening, to say nothing of smaller circuits around *Jhio* (called *Bār Khor*) and other shrines: at least this is imperative on common folk: as to the great and wealthy, they urge that their presence would only interfere with the piety of the people, so they engage substitutes, who however are rigorously required to circumambulate for their masters. But whether done in person or by proxy, a careful reckoning is kept of the number of circuits performed; and these in occasional cases of excessive devotion are even executed by the method of successive prostrations full length on the road, each prostration beginning where the preceding one ended, called *Kiāng Khor*.

24. Referring here, as throughout these remarks, only to the lines of exploration under notice, the Da Lama in his secular functions governs to Gartok on the east and up to the Maurus or Di Chu river on the north. Omitting minor officers, he is aided by his Gyalbo or Prime Minister and a council of eight, lately increased to nine; of the latter four are *Dabas* who wait on him in Po-ta-la and of the five remaining, four are laymen who are helped and also looked after by the 5th, who is a *Daba*. There are also two Ambāns or officials from China, who are reckoned of *equal* authority, accompanied by their indispensable and important secretary, called *Jaqpoche*; as the latter writes all the despatches to his country, his power for good or evil is reckoned as not to be overvalued: these Ambāns were originally established in Lhāsa with the professed object of protecting the Da Lama, who however it is said now finds their presence embarrassing and of a nature that he could dispense with: the province they watch over, extends north to the Maurus river and Niamcho district, and eastward at least to Ta-chien-lu: north of the Maurus-Niamcho boundary, the presiding Ambāns are those residing at Siling, or Sining-fu, a large Chinese town some 60 miles east of the Koko Nor. Besides these functionaries there is an officer of the rank of Captain from Nepāl: his importance however is evidently only secondary in degree, and in fact the distinction of riding in a *pālki* (palanquin) is an honor enjoyed only by the Da Lama, his Gyalbo and the two Ambāns; nor is it permitted to these four high potentates to travel by any other means whatever.

25. As regards trade routes to Lhāsa across the lines of explorations under notice, there are two from Ta-chien-lu and one from Siling. Of those from Ta-chien-lu, the southern is called the *Junglam* (or official road) and is continued beyond Lhāsa westward some 340 miles to Ting-ri: it is a made road with rough bridges and is kept in good repair, being the main line of communication between Lhāsa and China and the line along which the Ambāns, as well as the Chinese posts travel; it runs from Ta-chien-lu *viā* Gartok, Chiamdo, Lho Dzong and Giamda to Lhāsa (and onwards as said to Ting-ri). The other route is called *Jānglam* (or northern road) and runs from Ta-chien-lu *viā* Kānzego, Kegudo, through the Hor country to Mora lake and down to Lhāsa. The third route is to Siling and proceeds from Lhāsa *viā* Mora lake, Giaro, and crossing the Tangla-homa (or Tangla lower) through Di Chu Rab Dun and Jun along the Koko Nor to Siling. There is but little traffic between Jun and Sachu and none whatever between Baron Tsaidam and Niamcho; the latter section runs in the vicinity of the robber tribes of Chiāmo-Golok and Banakasum, and in fact it is so rarely used by travellers that the track of their footsteps can be detected only by a few expert Mongolian guides.

26. Returning to the explorer, after an unavoidably prolonged residence at Lhāsa he at last started, with his party of six, northwards, in company of a *Kūfila*, which consisted of about 100 individuals. The majority of these were Mongolians, who in a few instances were accompanied by their wives; the remainder were Tibetans (or *Bodpas*). The Mongolians were all mounted without exception, besides that each person led a horse laden with his property: in fact Mongolians of either sex, with the command of numerous horses in their own country, are so accustomed to riding that they wonder and laugh at pedestrians: even their shepherds ride around their flocks, and in a word no Mongolian will walk on any occasion when he can contrive to ride. The Tibetans of the *Kūfila* mostly walked, leading their laden horses. All were armed with spear, matchlock and sword, a custom so universal in Tibet as well as Mongolia that even the monasteries have adopted it of recent years. In the present case, the necessity for weapons was all the greater that *Kūfilas* are special objects of plunder to the hands of mounted robbers who roam over large tracts of the country and appear suddenly when

least expected: hence it comes about that the dominant thought which governs all procedure in a *Kāfila*, is how to escape being plundered. To this end the present assemblage of travellers proceeded cautiously and with no needless disturbance, being preceded and followed at some 2 or 3 miles by a couple of horsemen from their party, to give warning of approaching danger; otherwise they exactly followed the advice of their Mongolian guides, to whom experience had brought much wariness as well as considerable skill in the detection and recognition of foot-prints on the ground.

27. Ordinarily, camp was struck about sunrise and the travellers proceeded on their journey, not neglecting to keep *close* order and when necessary waiting for stragglers\*. A brief halt was made for tea at 10 A.M., after which the march was continued to between 2 and 4 P.M., when camp was formed for the night, the Mongolians and Tibetans occupying either flank with the horses between them; the forelegs of the latter were also generally hobbled with ironbanded fetters, rendering locomotion for the time impossible. While some set up tents, others collected the dung of beasts, generally plentiful and the sole fuel† procurable, or mixed a hasty dish of *sattu* (flour of parched corn) as a preliminary to the chief meal of the day: as to fodder, grass was always abundant and the horses fed within the limits of their tethers. In point of food, tea was prepared by thoroughly boiling powdered brick tea and adding to the strained decoction, butter‡ and salt; the tea now ready was served in small cups, chiefly wooden, one of which every individual carried day and night on his person. *Sattu* was consumed in the form of a paste made with water or tea. As to the principal meal of dinner, it consisted of flesh boiled in water and eaten by itself without bread, in fact flour is generally too scarce to provide bread, or to be regarded as anything but a luxury: the soup was thickened with a few pinches of flour and plenty of *Chūra*§ which is abundant all over the country and is in daily use by rich and poor alike: there were no vegetables of any kind, excepting a few wild roots occasionally procurable. The business of the day being thus carried through, it was brought to a close by smoking pipes (of tobacco), of which the bowls and mouth-pieces were of metal and the stems of wood: singing or music or other needless noise was objected to, as likely to attract undesirable attention, and a guard of two Tibetans and as many Mongolians having been set, the travellers fell into well-earned sleep.

28. The bands of robbers infesting these regions may be here suitably noticed. The tribes from which large numbers adopt robbery as a profession are all of Tibetan nationality: the most numerous, powerful and best mounted bands are those from the Chiāmo-Golok and Banakasum tribes, south-west of Siling: these roam to the north in Mongolia and west in Tibet, but not to the east or south where cultivation more or less exists. The western robber tribes are those of the Shangshung, Nāg Chu Kha, Jāma, Ata and Yāgra; these roam so far and wide apart, that the explorer had often heard of their performances in the distant west, up to even the Manasarowar lake when he was travelling in that locality. All the tribes are nomads of the kind known as *Dokpas*, or dwellers in *black* tents; they are all armed alike with matchlock, spear and sword, and are invariably well mounted as the risks of their lawless profession require. They regard not remonstrances from Lamas, but there is one unwritten law which they all scrupulously respect, for reasons not difficult to imagine, and that is never to plunder in their own districts. To the eastern tribes of marauders, Mongolia offers a fertile hunting field for horses, which are bred there in large numbers. It is true that the owners of these beasts carry arms like the robbers and of late years have even acquired some soldierlike qualities by being drilled, but the Mongolian is by nature timid (as well as honest) and his weapons prove to him more a source of burthen than means of self protection. Further he cannot help being vulnerable in the matter of his horses, which he can neither conceal nor protect, and which the eastern marauders accordingly drive away in herds at will. The robber tribes rear yaks, horses, goats, sheep and dogs, all of which, as well as butter-balls and bags of *Chūra*, they offer in barter with an air of much innocence and business to passing travellers; desiring in exchange tea, cloths of gay colors, jaggery and the like; but travellers are chary of familiarity with such traders, never doubting that the intention to relieve them of all they receive in exchange will fail only from lack of opportunity.

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\* There is no special provision in a *Kāfila* for carriage of the sick, who must needs be left behind when no longer able to ride on a horse: excepting cases of persons who can afford servants, the helpless individual is left to his fate with some food and water placed near him, and it naturally follows that as a rule he is never heard of again.

† A pair of bellows is an essential article in every Tibetan family, whether resident or travelling, for without its help the only fuel commonly obtainable, i. e., dung of yaks, horses, &c., could not be ignited.

‡ There is no occasion to convert butter into *ghi* in a country so cold: the former is sold sewn up in leather balls of various weights up to some 30 seers.

§ *Chūra* is a most valuable article of common consumption in all Tibet and Mongolia and one of the largest products of these countries where milk of kinds is so abundant. It is made by boiling down butter-milk to a thick paste and drying the latter: in value, *Chūra* is about twice as expensive as corn flour.

29. Following now the line of country traversed, and starting from Lhāsa at a height of about 12,000 feet, it is described as a succession of ascents and descents between precipitous hills, affording passages at all times restricted and in some places so narrow as to admit only a *single* line of horses: rocks abound, yet at least scanty cultivation is not absent; also, the people live in houses: this continues up to Chiomo Lhakang, where a change of aspect commences and is fully established at Lāni pass in the Dam. The traveller has now mounted the Chang-tang (Chang-thang), a tract so peculiar as to deserve some special notice.

30. The Chang-tang is a vast and marvellous expanse of high undulating land, of which from various causes but little is known and even this limited information is not put together, so far as I am aware. It is not pretended that many new facts can be contributed here, *if* indeed in a country of the kind many remain to be elicited, but as it is desirable that some exhibit of the Chang-tang, its occupants and specialities should be presented as a whole, I have for this purpose availed myself of the considerable information possessed by the explorer which is too valuable to be neglected. I have accordingly extended the Index to the explorer's work sufficiently to the west to include the Chang-tang up to about meridian 76°, and to the north to show some portion of the country adjacent there: it is to this exhibit drawn from the explorer's statements, that reference should be made in connection with what follows. The high land it will be seen is only some 100 miles broad to the west near Skardo; it is widest on the meridian of 86° where it is some 500 miles across, and to the east it ends in an inclined width of some 350 miles, from whence it slopes further eastwards, rapidly losing its characteristics and merging into the cultivated lands of China: its length is about 1,500 miles and in area it is some 480,000 square miles or say 3½ times the area of the United Kingdom of Great Britain and Ireland. The western and southern edges are fairly well known from Skardo to Niamcho; not so its circuit round eastwards and up to Namohon, nor yet its northern edge; at the same time in these respects also there is reason to conclude that the exhibit is fairly correct. The strip of Chang-tang falling in the explorer's present travels lay between Lāni pass and Niamcho on the south, and was bounded on the north by the Kuen Lun\* range (Angirtakchia to Namohon); this however is by no means his first introduction to the Chang-tang.

31. This enormous tract of high table-land is believed to be generally some 15 or 16 thousand feet above sea-level, rising to a maximum somewhere in the vicinity of the Manasarowar lake; in a word it stands *above* the line of perpetual line of snow in Europe, and hence this expanse of land, which otherwise would be invaluable, is utterly unfit for cultivation, or, except under great restrictions, any use by man. It is said to be similar in character *throughout*, and to present a succession of easy undulations, well covered with earth and almost free from stone: the knolls in places form into ridges which sometimes carry high and snow-clad heads, but invariably the inclines are gentle and there are no precipices: water is plentiful and in places there are even large and handsome lakes, as the Manasarowar, Tengri Nor, &c.; further, the whole Chang-tang is coated by a short succulent grass, which from May to August, covers the undulations with the softest of green carpets, extending far away, and visible for even 50 or 60 miles in the clear crisp atmosphere prevailing. But beyond the abundant grass *nothing* else will grow on this high land; there is no wood or scrub of any kind for fuel; and, in a word, the products of the earth are solely suited for graminivorous animals, which run wild in enormous numbers, as the yak, goat, sheep, deer, &c.; and the weaker of these provide food for the wolf, jackal, and *yi* (a large wild cat) to which the carnivora are limited. It is said the grass does seed, and most probably is propagated chiefly by that means; but other seeds, as of wheat or barley, though they germinate and produce fodder for cattle, yield only *seedless* ears, and hence no food for man.

32. The northern portion of the Chang-tang, tinted green in the Index Map, is *wholly unoccupied* by man, being far too distant from lands where corn and other products necessary for human life are produced in sufficient quantities to supply its wants; it is however as said overrun by enormous herds of wild animals, chiefly graminivorous, to whom further brief allusion will be made: this uninhabited belt borders on both north and south other belts, which are dotted more or less by nomadic camps: the belt to the south (tinted yellow in the Index Map) is the continuation of the Chang-tang and is peopled by *Tibetans*, who live invariably in rectangular-shaped tents, *black* in color, made from the hair of the yak: the northern tract (tinted violet in the Index Map) is beyond and below the Chang-tang, and consists of sandy wastes not infrequently diversified by oases, which are peopled by *Mongolians* living in round, *white* tents made of felt. Thus, this uninhabited belt of the Chang-tang lies between the *white*-tented Mongolian nomads to the north on the sandy lands, and the *black*-tented Tibetan nomads to the south on the continuation of the Chang-tang; but beyond

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\* So named by Prejevalsky and also independently recognized by the explorer as probably the Kuen Lun he crossed when going to Yarkand.

the common fact of residence in tents, similarity in feature and religion, there are wide differences between the white and black tent nomads. The Mongolian is timid, peaceable and generous, little desirous of change and anxious only to be left to his own devices: his land produces *both* corn and a variety of animals, and with these he is content and happy. Not so the Tibetan nomads, whose necessities alone tend to acquisitiveness; for unable to grow corn on their high land they must needs barter for it other articles with their southern neighbours. These black-tent nomads are called *Dokpas*; throughout the considerable length of their country, they resemble one another closely; they all dress and arm alike and have similar occupations and habits; and in fact clans now in the vicinity of the Manasarowar lake (where they are less lawless than elsewhere) claim that their ancestors migrated from Chiāmo-Golok, distant some 1,000 miles to the east. The *Dokpas* though existing on the produce of their locomotive farms, are compelled, as said, to barter with their neighbours below the Chang-tang for articles which their own high land will not produce, but apart from this unavoidable association, they keep chiefly to their own clans, and most probably these highlanders have maintained in their semi-isolation, the primitive manners and customs of their progenitors for many centuries past. Finally, they are all more or less robbers by profession; to them might gives right, always excepting the recognised law by which the property of a fellow clansman must be respected, and hence to pursue their business in a manner lawful to them, they roam in mounted bands far and wide in search of plunder. Notwithstanding their predatory habits, it must not be omitted that they all acknowledge the Da Lama as their spiritual head, and perform periodical pilgrimages to Lhāsa in order to present themselves with due reverence before their high priest. But on these, as on all other occasions, they invariably keep an eye open to business proper, and the devotional nature of an errand is not permitted to interfere with convenient opportunities for plundering their neighbours. So the *Dokpa* comes to be trusted by none, unless perhaps by his fellow clansmen, and by these even, only while on the highland common to the clan.

33. At least a few words of special notice are also due to the vast numbers of wild animals abounding mostly in the large uninhabited tract of the Chang-tang. They suffer diminution from only one cause, and that is occasional extreme severity of winter, when, deprived of grass, they die by thousands as their skeletons testify; but apart from this they lead the most peaceful of lives, multiplying and increasing in kind without hindrance; for enemies in the shape of sportsmen are practically absent, and unless disturbed by a robber troop, or by the rare passage of peaceful travellers, they have little cause for disquiet apart from their own family events.\* Indeed, the vast numbers as well as the perfect unconcern of these wild beasts, sometimes proved very embarrassing to the explorer on that portion of his returning route between Namohon and Niamcho, where travellers but very rarely pass. Speaking chiefly of wild yaks, they were seen in such considerable herds that some three to four thousand beasts were visible at short distances and *at the same time*: handsome, black brutes, without a single speck of the white which appertains to domestication and bondage, and with long hair trailing so low as to conceal their legs, they presented to view remarkable, great, dark moving masses of animal life. Occasionally a solitary monster bull with wicked eye and questionable intentions deliberately walked up to within only 10 or 12 paces and inspected the explorers inquisitively, as if with a view to further proceedings friendly or inimical. It was impossible to regard these attentions without respect, akin to awe, for the obvious considerable physical powers of the handsome, solid looking brute, whose long hair, nearly touching the ground, gave him the appearance of enormous girth, and as if in fact he was *all* body from hump to hoof. His jet black coat glistened in the sun-shine, and as his small reddish eyes seemed dancing with mischief, which the solid horns above were fully calculated to accomplish, he cocked his tail, whisking about its bushy hairy pendant, and pawing the ground vigorously, stood doubtfully regarding the travellers as to whether he should consider them friends, foes, or only curiosities: thus situated the explorers prudently steered their course as far from their visitor as circumstances permitted. A wild bull-yak, adds the explorer, will probably weigh  $1\frac{1}{2}$  to 2 tame ones, and his head and horns are a full load for a strong man.

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\* Having implied how very little these wild animals serve any purposes of utility (apart from the rare occasions when they may be shot for food), I am bound to notice that in one respect at least they are absolutely necessary: their dung, especially that of yaks, provides excellent and abundant fuel, without which no traveller could cook his food (almost entirely of flesh) and live to cross the Chang-tang. As a rule Tibetans never warm themselves by fires, for which therefore fuel is not used, if indeed it be available: they trust to warm clothing and feeding on flesh for conservation of their own bodily heat, and not only do they succeed thoroughly, but albeit the absence of all vegetables and even the smallest pretence of ablution, scurvy, leprosy, and in fact all skin diseases are unknown; while ailments of any kind whatever are exceedingly rare. A bath would be about the most disagreeable infliction that could possibly be imposed on a *Dokpa*, who is known simply never to bathe; at least not voluntarily; and the reservation is necessary, because babies up to the age of 2 or 3 months are, it is said, occasionally washed as a preliminary to being coated with butter. As regards the women, no lady without risking pretensions to good manners and even respectability could commit the indiscretion of washing her face; and in fact any offence of the kind would certainly justify even her friends in considering her as an exceedingly "fast" and probably not quite proper person. Though very healthy, the *Dokpa* ages young, losing his teeth and even eye-sight when perhaps only 40 years old: nor does he live to a great age.



34. Returning now to the *Kāfila* which was followed to Lāni pass at the commencement of the Chang-tang, it continued its course across that high land observing every precaution against robbers. The country up to the Tangla range being occupied more or less by nomads, was so far easy to traverse that the required track was sufficiently worn at intervals to admit of being found readily: but north of that range, the ground showed no track whatever, so that the Mongolian guides,\* frequently at a loss in which direction to proceed, mounted neighbouring heights, in hopes of recognizing some familiar land-marks, and otherwise shaped their course from one prominence to another. It may also be noted that at the Saung Chu (lat. 32° 12') the direct road *via* Di Chu Rab Dun was rejected, and a more westerly course adopted as less likely to be infested by robbers: hence, on crossing the Kuen Lun (or Angirtakchia) range the party descended on the northern side into Mongolia at Naichi. Here a complete change of aspect presented itself; the travellers now passed along an undulating valley from 1 to 3 miles wide, bounded by hills described as sandy and conglomerate in formation, a description which applies generally to all the hills seen in Mongolia.

35. The most striking feature however now prevailing was, that the surface of the land had a whitish coat, called *Bācha*, decidedly salt in taste, and this was seen *all over* Mongolia: this saline powder was moreover easily raised and driven about in clouds by the wind, which blows persistently and with considerable force, and the travellers painfully realized the presence of salt in the dry air by cracks in their skins where not protected by clothing. In a word, the grassy carpet and clear crisp atmosphere of the Chang-tang, was now replaced by an arid, whitish waste, while the air, generally laden with haze, sometimes became so dense in high wind that the view around hardly extended beyond a hundred paces. The salt even affected the shrubs and trees which were now met with, and this in a peculiar manner; adhering to the bark, a white coat formed around the roots and gradually spreading upwards, eventually killed the plant. At the same time oases were both numerous and extensive; indeed everywhere that water appeared on the surface there vegetation abounded luxuriantly; the grass in particular grew green and strong, rising to 2 or even 3 feet in height, and in fact it is to these instances of bountiful provision that Mongolia enjoys its ability to rear the large numbers of horses, camels,† sheep, goats and other graminivorous animals for which it is celebrated. Still, notwithstanding the very considerable exceptions represented by the oases, the country as a whole (of course only so far as traversed) consists mostly of sandy wastes and is one where salt predominates and permeates so generally, that the Mongolian finds it unnecessary to take any in his tea and hardly any even with soup and flesh, while to cattle, sheep, &c., none whatever is given.

36. Passing onwards from Naichi, the *Kāfila* proceeded along the narrow valley already mentioned, until on arrival about Golmo they debouched into the verdant and wider valley in Taichinar. This valley has been traced from Shang Tsaidam (east) by Tengelik and Golmo, from whence it passes on westwards south of Hazir; several rills of water run in its bed, which is moreover green with grass and foliage and presents a valuable tract for pasturage; but between it and the northern hilly ranges, there runs a dry barren belt of earthy sand, which contrasts the more prominently from its proximity to the green valley below. Dispersion of the *Kāfila* began at Golmo, after suitable farewells and mutual offers of hospitality which occasion might hereafter permit; but beyond and above this, the company exchanged hearty congratulations on their own cunning and sagacity, by which they had evaded their enemies, the robbers, and had escaped being plundered; unfortunately, as will be seen hereafter, these congratulations proved premature to at least several of the travellers, including the explorer, who proceeded eastward to Tengelik.

37. Along the routes followed in **Mongolia**, the population are all nomads, always excepting the town of Sachu where the people live in permanent houses. These nomads resemble the nomads of northern Tibet in several respects, including general appearance: they are however more amiable and certainly more honest, and in fact the Mongolian (or Mongolu as he calls himself) ascribes his immunity from lightning, to his own truthfulness and respect for his neighbour's property, and points with an air of superiority to the robbers of Chiāmo-Golok and Banakasum, from whom he suffers grievously, and who, he says, *therefore* suffer frequently from thunderbolts.‡ The Mongolian is naturally very friendly; an individual of either sex pairs with but one mate, and even the *Daba* (or priest), who is also a nomad, is socially permitted to adopt a consort, albeit the law forbids him a wife. He lives largely on flesh, tea and butter, and

\* With the maps now available Chang-tang may be crossed in any required direction with certainty by following the proper bearing as indicated by a magnetic compass: at present travellers stray very considerably, and in some instances, starting from the Lob Nor, as they imagined straight for Lhāsa, have been known unintentionally to arrive at the Manasarowar lake.

† The Mongolian camel is a valuable beast of burthen in the winter months, when it has a very bushy coat of long hair; but the whole coat is shed in summer when the beast not only becomes quite sleek, but it loses all strength and energy and is practically useless.

‡ As a matter of fact the country of the robbers is one of mist, cloud and electricity.

is also not without corn of kinds; his fondness for milk is as conspicuous as in a calf, and in order to indulge this taste, he levies contributions from all animals alike, including sheep, camels, and even mares.\* It must also be added that he is exceedingly partial to intoxicating liquors, in which every one indulges, regardless of sex or age; but though he may get drunk, he seldom quarrels, and even if incapable, so that his legs are no longer reliable, he can still sit his horse and travel in safety, as he has done from the time when he was but a baby. He can read and write in characters of his own, which differ from the Tibetan, and like his southern brethren, he owns spear, matchlock and sword with which in times of *peace* he exercises diligently; but unfortunately he is deficient in nerve; he argues, says the explorer, "If I fight I *may* be killed", and so, at the first burst of the robber's war cry, he vacates his tent, almost with alacrity, and betakes himself to safer localities, until his enemy has stolen his horses and departed. A Mongolian's riches consist mostly in horses, (besides various other animals); they cost nothing to keep and little more trouble after gelding them; they are sturdy and docile and are much attached to their master who is fond of them in turn: but for all this the Mongolian cannot bring himself to fight for his horses, and it is doubtful, whether, if unable to run away, he would fight even for himself. Convinced of his foible he conceals such articles of property as he may possess in odd places, and thus in running away he has at least the satisfaction of knowing, that the tent he necessarily leaves behind is quite empty. The robber knows this too and so confines his attention to the horses solely. No Mongolian is so poor, but that he owns half a dozen horses; in a few instances there are herds of even 500 beasts. One stallion to every 20 or 30 mares is reckoned the proper proportion.

38. The explorer and the *Bodpas* (from Lhāsa) of the party pursued their course eastward to Tengelik where they camped peacefully in the neighbourhood of the nomads, who numbered some 100 tents and possessed 300 to 400 horses. Here the explorer and his party rested for a while and made arrangements for further progress northwards; in fact the morning of their intended departure had arrived, and they were about to load their horses for the march, when as the dawn was yet breaking the robber's cry of *ullul-lullul-lu-u-u* suddenly burst on the peaceful encampment: in a word the robbers, some 200 in number, had effected a complete surprise. The Mongolians according to precedent at once scattered far and wide without making even pretence of resistance, and the robbers having seized the horses they coveted, next attacked the small party of explorers and Tibetans; there was some firing on both sides, but numbers prevailed and the robbers remained masters of the encampment, which having rifled rapidly, they departed. Eventually when the owners returned to their tents, now practically empty, they found a single dead robber, shot in the conflict, whose dress and arms enabled them to recognize, that the marauders belonged to the dreaded band of the *Chiāmo-Goloks*: in fact to the identical highland clan whom the unfortunate travellers had hitherto successfully evaded.

39. The losses he incurred here, crippled the explorer and his two comrades most deplorably; notwithstanding, he collected the remnants of his effects, and bravely refusing to turn homewards, set his face towards Sachu, resolved on further exploration. But misfortune still followed him, and the facts may be briefly mentioned here. He had progressed some 330 miles towards Sachu, when one of his two comrades, who had shown aversion to further exploration and partiality for adopting Mongolia as his residence, suddenly decamped with the horses of the party as well as with nearly all the remnants of property which the robbers had failed to carry away, leaving the explorer and his remaining comrade practically paupers. Under these circumstances, no one could have reproached the explorer had he now endeavoured to retrace his steps, but he once more rose above adversity, gallantly making *his way* onwards to Sachu, and it was only when detained and turned back from thence, that he at last reluctantly retrograded towards India. Even now, he chose a *new* and *far longer* route, which in the end involved his journeying over full 1,890 miles, and though penniless and dependent on charity, he continued his observations to the very end, exercising regularity, care and skill, and unconsciously evincing such unflinching courage, gallantry and sense of duty as may well be admired.

40. Proceeding northwards from Tengelik there is little of note to discuss, until reaching Yembi in the Sirthang district: here there is an extensive plain well watered, covered with grass and affording excellent pasturage for large herds of animals: horses in particular are most numerous and may be counted in thousands. Yet, the climate is by no means genial, and this not so much in consequence of unusual cold, as owing to the prevalence of strong biting winds, which blow persistently and almost continuously excepting in November and December. There is little snow or rain, but distant clouds without mist are frequent: water freezes readily in the open air, excepting in July and August; and in the winter months, the successive cakes of ice formed at a spring, sometimes mount up curiously one above another in piles over 6 feet high. It is however chiefly the piercing wind which makes the climate of Sirthang exceedingly severe

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\* The mares are said to yield only but *little* milk each time it is drawn; the secretion however is rapidly restored, so the Mongolian repeats the milking process at *short* intervals.

in January and February, when all young and otherwise tender animals are removed, for protection against it, to various enclosed valleys in the hills which lie to the north. Otherwise these hills are also well known as being inhabited by a few wild human beings and some herds of wild Bactrian camels; the latter are an object of sport, and their flesh finds a ready sale at Sachu and elsewhere.

41. The most northern place visited by the explorer was the town of Saitu or Sachu (Prejevalsky's Ssa tshu): it stands surrounded by small villages in the midst of an extensive and very fertile plain watered abundantly by a river, which, here flowing nearly north and south, runs close to and west of the town, where it is crossed by a strong bridge with two flat openings. Seen from the south, the town and its surrounding villages are mostly concealed amongst high trees, which are backed by distant low hills, visible in the distance so far as the usual prevailing hazy atmosphere of Mongolia permits: the most attractive feature on which the eye rests, is however the extensive and green expanse of cultivation in which Sachu stands: this verdure, so pleasant to behold in contrast to the generally arid surface of Mongolia, extends fully to Nāhuli on the north-west, and in fact probably reaches to full 20 miles from the town in all directions; the land as said is highly fertile, and enjoying as it does an ample water-supply, the harvests are large and varied in kind; on them the prosperity of the place mainly depends. The city is in the shape of a quadrangle, about  $1\frac{1}{2}$  miles long east and west and some  $\frac{1}{2}$  mile wide: it is surrounded by a ditch some 6 feet deep and 15 wide, which encloses a solid wall about 25 feet high, with circular bastions at the corners and surmounted by a parapet pierced with embrasures at intervals: accommodation for the garrison is provided in the four angles of the surrounding wall. There are four large gateways, one in each side of the quadrangle, and the two roads joining opposite gateways are the main thoroughfares in the town: the *bāzārs* and dwelling houses are built mostly along these roads, which in places are covered in with straw spread on rough wooden frames: the north-west angle, at the junction of these main roads, is enclosed by a branch road, north of which stand the residence of the governor or *Dāloi*, the Jail, &c., &c. The four entrances are gated, but these structures are mostly out of repair and the wall enclosing the city now has several gaps in it.

42. The population of Sachu and surrounding villages is almost exclusively Chinese\* who in certain respects contrast unfavorably with the Mongolians: the latter though rough and comparatively uncivilized, are honest, hospitable and generous, while the former are not merely thrifty but very exacting. *Sākhāngs* (restaurants) are common and popular, and food including vegetables and fruit abundant and cheap†, excepting sugar which is imported. Intoxicating liquors are plentiful and drunk by one and all without exception: opium also is consumed‡, chiefly by smoking, and can be raised in the neighbourhood though not to the extent required: but notwithstanding alcohol and opium, the Chinaman is essentially peaceful and law abiding, not the less so, that punishment for even slight offences may be inflicted with such severity as to cause painful deaths. Capital punishment may not as such be ordered by the *Dāloi* without sanction from China: fatal results are however attained without actual decapitation, which is the recognized form of legal execution. As to houses, they are all of one floor and consist of small rooms; there is no window glass: the walls are built of blocks of clay, or what in India we should call (huge) *kacha* bricks, and the roofs are made up of scantlings laid close together with plenty of earth beaten flat above them. Fuel and straw are plentiful. The rain-fall is small, though clouds are common. The explorer did not find the place cold notwithstanding its high latitude ( $40^{\circ} 12'$ ).

43. On the whole, Sachu cannot be compared with Lhāsa in point of interest, wealth or population: its people, as said, are nearly all of a single nationality—the Chinese, and its trade is mostly with the north and west, the traffic being carried in carts drawn by 2 to 5 horses. To the explorer the people proved inhospitable and ungenerous, and like others who are in poverty and friendless, he was regarded here with distrust, so that the further progress northwards which he contemplated was prohibited: nor even was he able to retrace his steps towards India: eventually a Lama from Thuden Gom-pa, with whom he was acquainted, happened to visit Sachu, and recognizing the explorer obtained leave to take him back with his party. In this company the explorer was obliged to ride on a horse down to Chakangnamaga, from whence the track which bifurcates eastwards (new to the explorer) was followed: here he became bullock-driver to the party, and walking by these beasts was able to reckon his own paces as usual to Baron Tsaidam: for the remaining distance to Thuden Gom-pa, the track runs in the vicinity of the Chiāmo-Golok and Banakasum robber clans, and by way of provision for escape, if necessary,

\* The people are commonly polygamists.

† Notwithstanding the fertility of the Sachu plain, the climate here, as in all Mongolia, permits of only one crop or harvest in the year.

‡ Sold for equal weight in silver. Note. The explorer mentions the singular Chinese coin called *Tāminan* (or *Doje* or *Nabchuma*) a mass of silver not unlike a cocked hat in general outline and equivalent to 156 Indian rupees; hence the coin must weigh something like 4 lbs. avoirdupois!

from these marauders, every individual of the party was required to ride; hence for this portion the explorer with commendable ingenuity reckoned the paces taken by the right foreleg of his steed, and the result shows that a horse steps quite as equably as a man.

44. The Chang-tang commencing at Namohon was left behind at Niamcho, and nothing further need be said of the country up to the latter place, as it has been discussed generally in previous remarks. Bidding grateful farewells to the Lama who had befriended him, and who was the master of Thuden Gom-pa, the explorer continued his journey towards Ta-chien-lu and entered on the tea-track at Kegudo, from whence, it will be seen on Sheet No. 1, the continuation of this track trends south-westerly and passing through the Hor possession strikes the line from Siling to Lhāsa at Mora lake. In point of general appearance, the whole tract of country along the route *via* Ta-chien-lu, Ba-tang and Gartok to Lāo village (north of Jio Gom-pa) is pretty nearly alike; it is rocky and of course all mountainous, but although caps of snow are visible occasionally, the hills are neither lofty nor severely precipitous; and the track runs along moderate inclines, or, as in the districts of Jokchen and Yulung\*, over grassy undulations; generally the road or passage is ample in width, but in a few instances, as along the left bank of the Di Chu, beasts of burthen can pass only in single file. There are patches of cultivation at intervals; grass and water are plentiful, and even wood (in addition to yak-dung) may be obtained occasionally for fuel: moreover the track is not liable to attacks from robbers, except occasionally in Jokchen and Yulung near which the Chang-tang† borders on the north-east. Herds of yaks and *jophos* carrying tea were met several times, for as stated, the explorers were now on the *Jānglam* or northern tea route between Ta-chien-lu and Lhāsa, and occasionally traders returning from Kegudo were also seen, carrying deer-horns, woollen fabrics, skins of wild beasts, pods of musk and the like, which they had obtained in barter for tea. But beyond these occurrences, there is little to note of the journey, or of changes in aspect of the country, excepting the beds of the great rivers between Ta-chien-lu and Lāo, where the Nāg Chu and Di Chu and the Chiamdo Chu run in wide valleys, well studded with large trees and underwood.

45. Arrived at Ta-chien-lu the explorer was once more in a town and amidst comparative civilization, circumstances which however rather aggravated the consequences of his poverty, so that in his distress, and hearing of the Jesuit Fathers who resided there, he determined to appeal to them for help: this was generously rendered both in advice as to his future progress and money, so that the Pandit was enabled to proceed onwards with a somewhat lighter heart. But little need be said of Ta-chien-lu, which is well known as the emporium for all the Chinese tea from the gardens to the east; it is from this place that the two tea routes to Lhāsa diverge: one following the *Jānglam* or northern route and the other the *Jungram* or southern and official road, as stated elsewhere. Ta-chien-lu is described as in a narrow valley, surrounded by snow-capped hills, of which the loftiest are probably those to the north. It may be added here that the whole tract of country passed through from Thuden Gom-pa to Lāo yields but *one* harvest annually.

46. It will be seen that from Ta-chien-lu the explorer travelled along the official road; he however had occasion to leave this road at Gartok, proceeding south-westerly to Sama (as will be presently explained) so that it was not until his arrival at Lho Dzong that he again joined the *Jungram*, which, between the places named, runs up north to Chiamdo and then down again south. From Lāo village southwards, the country changes in various ways; the hills are very rocky, rugged and precipitous, and with exceedingly narrow valleys; cultivation is plentiful to the extent of ground available, and not only are the crops abundant but the climate admits of *two* harvests in the year: where *all* these circumstances obtain, the country is called the Rong, and as respects the route followed, they were experienced up to Ata Gang pass; but it is understood that the Rong lay below (south of) the Pandit's route by only some 20 to 30 miles the whole way to Tsetang; the province of Po to being just north of and that of Po me in the Rong: thus, so far as the route followed is concerned, from Lāo to Ata Gang pass *via* Sama, it lay throughout in the Rong, yet it is in this portion of his journey that the explorer saw the heaviest snow-clad and presumably the highest mountains.

47. Proceeding south from Lāo village, the lofty peaks‡ of Khaharpo, perhaps 20,000 feet high, attracted attention; the Pandit concludes that the range on which they stand is cut through a little south of them by the Chiamdo Chu, because Khaharpo being a place of pilgrimage,

\* These are the two most famous yak breeding districts on this line; other equally favorable localities occur in the Hor country.

† The robbers being all horsemen can only operate on the Chang-tang or adjoining open and undulating lands.

‡ A distinction may be noticed between the snow hills of the Chang-tang and those of the Rong. In the Chang-tang the snow cap is a round bluff and is immediately followed below by the coat of grass which covers the undulating ground and extends continuously down to the ordinary levels of the high land. In the Rong the peaks are precipitous and pointed; the snow line is followed by a belt of a mile or so of grass, succeeded by brushwood which grows stronger and higher in descending and eventuates in lofty and large timber trees.

pilgrims from Lhamdun pass *round* it to the south and rejoin the road at Dayul Gom-pa: it was also locally affirmed, by a few persons who had evidently travelled southwards and visited certain shrines in Burma, that the Chiamdo Chu, and also the Giama Nu Chu ran into that country\*: this evidence and the topography from Lepper's map suggest the conjecture that the Giama Nu Chu falls into the Salween, but on this point and all others in localities *not adjoining* his route, the explorer of course cannot speak from personal knowledge.†

48. From the Koli pass (perhaps 14,000 feet high) the Rirapphasi peaks (estimated at some 20,000 feet in height) became visible; these are plainly connected with the Neching Gangra range which was crossed at Tila pass, height 16,100 feet. The explorer was now in the horse-shoe-shaped basin of the Zayul Chu, one of the feeders of the Brahmaputra, and travelled down the bed of that river to Sama, with the lofty Neching Gangra range on the north and its lower continuation south, both ranges being *visible* at intervals: he has no doubt that the peaks of the Neching Gangra are the loftiest he saw, and by estimation the explorer places their height at some 25,000 feet.

49. Up to Sama, the explorer had travelled in the glad expectation that he could pass straight across the Mishmi (or Nāhong) country, and in fact only some 30 miles now divided him from British Territory; but he soon found to his great disappointment, that those few miles presented a barrier impenetrable not only to himself, but to the people of Zayul themselves: in a word none of the latter dare venture to cross into Assam through any of the neighbouring tribes. Beginning in the latitude of Ata Gang pass, the Lhoyulis (or *Lhobas*) stop the way: from thence along the south-west border the Mishmis refuse passage: while across the range, south-east of Zayul, the Zayulis have no communication whatever: thus Zayul is absolutely shut in on east, south and west. That the Mishmis and Lhoyulis mean what they say, is proved by their killing every one from Zayul who ventures much beyond the border villages; on the other hand the Mishmis freely enter into Zayul for purposes of barter. The reasons for this one-sided arrangement are however not difficult to see, for at present the Mishmis and Lhoyulis are the middle men, in point of British produce, between Assam and Zayul; a monopoly in trade which would wholly disappear if the Zayulis could venture across into Assam. Apart however from inability to satisfy their curiosity as travellers, the people of Zayul have some reasons to be content with the arrangement, for the articles they barter in return are valued chiefly by their neighbours, who are content to accept salt and any animals whatever with *large horns* in exchange; in fact, content or otherwise, the Zayulis—peaceable and even timid—are unable to penetrate the tribal barriers, and so must needs admit their neighbours to barter or deprive themselves of all imports.

50. These circumstances however were of little consolation to the explorer, who after his long journey was now bitterly disappointed at finding the few remaining miles to British Territory absolutely barred by barbarians who would certainly kill him like all other intruders, if he ventured into their country; and yet, as will be seen subsequently, but for this very disappointment which compelled him to perform a circuitous route around the Tsang-po‡ he would not have solved one of the most interesting geographical problems of modern times. Reluctantly turning his steps from home, the explorer gallantly faced northerly once more, and at the Ata Gang pass crossed over from the Rong: here he came across the only glaciers in his journey, and these at the pass *united*, so as to slope contrary ways; the height of 14,690 feet which he determined was probably some 2,000 feet below the glacial ridge.

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\* Articles 200 and 207 of "Translations from Diary and Notes" speak of the two rivers Chiamdo Chu and Giama Nu Chu respectively; and from local information along the route, the articles state *alike* of both these rivers that they "pass by Riu Chiako", which is reported to be the name of a place of pilgrimage in Burma (Upper). This *similarity* of statement regarding the two rivers may lead to the conclusion that some *definite* idea as to their southward courses is intended to be conveyed; for instance, that the rivers run on either side of Riu Chiako which is on a narrow belt of land between them. In fact however, nothing definite is known or intended, and hence some further explanation as follows is necessary:—

Riu Chiako is reported to be a hill in Burma (Upper): it is reckoned of great sanctity by the Tibetans, who occasionally visit it on pilgrimage: the journey however is greatly dreaded, especially because of the considerable heat to be endured to the south, and from one cause or another but few Tibetan pilgrims survive to return home. Along the explorer's route not more than one per cent. of the people had performed the pilgrimage: these informed him, that Riu Chiako was distant some 3 months' journey along a very rugged path which quadrupeds could not traverse. All the Tibetans the explorer conversed with, including the pilgrims themselves, were ignorant of the very name "Burma," and the only name of which they appeared to retain recollection, was (naturally) that of the place of their pilgrimage—Riu Chiako: to them, their experience of the south was all covered by Riu Chiako: hence in reply to the explorer's enquiries, as to the course southward of the Chiamdo Chu, or of the Giama Nu Chu, the answer was alike; "it runs to (or towards) Riu Chiako." Beyond this, nothing more definite is known or was intended in articles 200 and 207 of the translation.

In point of derivation, the town or large village of Chiamdo probably furnishes the river Chiamdo with its name. As regards the Giama Nu Chu, or simply Nu Chu, it runs through the Nu Chu Giu country, and in this case perhaps the locality was named after the river. Speaking of the prefix Giama, the explorer translates as, *Gia* warm country, *ma* downwards, or *Giama* as a whole to mean, towards the warm country lower down; which is in keeping with the local belief that the Giama Nu Chu (as well as the Chiamdo Chu) runs to Burma (Upper).

† The Nāg Chu and Di Chu were locally considered as rivers running into China.

‡ Tsang-po merely means "a large river" and is equally applicable to *all* large rivers. The proper name of the river, south of Lhasa, called Tsang-po on Sheet No. 1, is Tsang Chu or Nari-chu.

51. With the Rong left behind, the explorer was once more in country similar to that already described, such as he had passed through before reaching Lāo village and yielding only one harvest annually: these features with but little variation continued along the remainder of the exploration. At Lho Dzong he rejoined the *Jungram* (southern road) and again met bands of traders between Lhāsa and Ta-chien-lu: leaving the road at Chomorawa Giachug, he turned southerly to Tsetang and eventually closed his work at Kam-pa-par-tse, having some 4 or 5 miles before crossed the *Jungram*, now leading from Lhāsa *viâ* Gyāntse and Shigātse to Ting-ri.

52. Returning now to the geographical problems which the explorer has helped to solve, broadly stated, one relates to the Irrawaddy and the other to the Brahmaputra. I do not purpose to enter needlessly into all the various conjectural hypotheses hitherto advanced (naturally on the limited evidence available) but to include these generally and only so far as necessary, and to dwell on the evidence which the Pandit has now secured.

53. I first dispose of the question as to the north-western watershed of the Irrawaddy. It will be seen from Sheets Nos. 1 and 2 that the Zayul district is peculiar, in that it is locked in right round by a high and continuous watershed, which is cut through only at one place, *i.e.*, by the Zayul Chu in about lat.  $28^{\circ}$  and long.  $97^{\circ} 5'$ : the district is made up of two valleys; in the eastern runs the Zayul Chu proper, rising at Tila pass; the western is the bed of the Rong Thod Chu, rising at Ata Gang pass; the two streams unite near Shika and then cut through the range, which in absence of other designation may be called the Rong Thod-Mishmi range.\* Now points on these ranges and mostly the ranges themselves, were actually seen and visually followed out by the explorer, and his verbal account in addition leaves no doubt, that apart from minor defects, which only an actual topographical survey could elicit, his delineation is in the main correct. On this evidence it now stands determined that the watershed of the Irrawaddy is the Zayul-Khanung range. This also makes it almost impossible for the Tsang-po† to run down the Mishmi country, and carrying the Zayul Chu‡ with it to discharge into the Irrawaddy, as has sometimes been imagined. The explorer ascertained by local enquiry, that a small stream (not a large one) does run down part of the Mishmi country and joins the Zayul Chu on its way to India, *i.e.*, to the Brahmaputra; but in reply to further enquiry, as to whether this small stream could be the Lhāsa river (*i.e.* the Tsang-po) the people ridiculed the idea.

54. Now following the explorer from Ata Gang pass onwards, it will be seen in Sheets Nos. 1 and 2 that the watershed lay to his right (*i.e.* east) as far as the Pass (Lake) which is about 40 miles north of the former. From the lake to Shiar (*i.e.* east) Gang pass it lay to his left (*i.e.* west). Here he crossed the watershed which now again fell on his right up to Nub (*i.e.* west) Kong pass: in fact the district of Arig (like Zayul) is ringed by a watershed, which is pierced only at one place, and that at Alādo Giachug by the Daksong Chu. It is needless for my present purpose to follow the watershed further west, for I have already arrived *west* of Gyāla Sindong (Gyāla and Sengdam, the place down to which the Tsang-po has been traced) and the question immediately in hand is, whether the Tsang-po runs *east* from Gyāla Sindong. I have shown in Art. 53 that the Tsang-po does not cut through the watersheds up northwards from the Zayul-Khanung range to Ata Gang pass, and in this article, attention has been called to the continuation of this watershed which runs round Gyāla Sindong to east and north from Ata Gang pass. Further the explorer positively affirms, that this watershed was nowhere cut through by any river whatever; least of all by a river so large as the Tsang-po; and I am confident that this statement is quite reliable. Thus taking Gyāla Sindong as a centre, the Tsang-po has no exit all the way round north and east, nor along the Rong Thod-Po me range or the range at the head of the Mishmi valley; *i.e.*, it has no exit right round Gyāla Sindong from north down to a point (call it X) somewhere in latitude  $28\frac{1}{2}^{\circ}$  and longitude  $95\frac{1}{2}^{\circ}$ .

55. Having stated this much, I come to the geographical problem that has hitherto awaited an answer. The Tsang-po rises near the Manasarowar lake, and from thence it has been traced, practically continuously for some 850 miles, to Gyāla Sindong, where exploration downwards is barred by savages§: what is the further course of this river? As already shown it has no exit anywhere north or east||, down to the point here called X; hence unless it

\* From want of other names, I here call the ranges round Zayul district by names compounded of the two districts which each divides; thus Rong Thod-Mishmi between the Rong Thod valley and the Mishmi country; similarly I adopt Rong Thod-Po me and the range south-east of Zayul valley I call Zayul-Khanung.

† I continue calling it so only to suit previous discussions.

‡ In this case, how should the Luhit river be fed; discharge 33,800 cubic feet with that of Tenga river?

§ The unexplored portion of the Tsang-po between Gyāla Sindong and British Territory is hardly 150 miles long.

|| It will be seen in Sheet No. 1 that a track runs across the Po me country, from Nankhazod (in Nagong, north of Ata Gang) to Giamda (in Kongbo), passing some 20 miles north of the bend in the Tsang-po above Gyāla Sindong: this track is frequently used by pilgrims to Lhāsa, many of whom were questioned by the explorer and stated that the track *does not cross* the Tsang-po; thus affording confirmation of the fact, that this river has no exit eastwards at least north of Nankhazod.

disappears in the bowels of the earth it *must* feed the Brahmaputra. The tributaries here of the latter and their discharges \* are as follows:—

Discharge of			Cubic feet per second.	Proportional part.
Dihāng	...	...	55,500	1
Luhit + Tenga	...	...	33,800	0·6
Dibang + Sesiri	...	...	27,200	0·5
Subansiri	...	...	16,900	0·3

Also of the Tsang-po we are told by the explorer, that at Tsetang the stream was some 400 feet wide; subsequently we know that it received the Daksong Chu, which, even at Alādo Giachug before receiving the Kongbo Giamda Chu, was (the explorer adds) *not* fordable: as to depth of the Tsang-po at Tsetang, this is described as “very deep”; no measurements were made, but a depth of 25 or 30 feet the explorer thinks certainly existed; moreover the water deepened rapidly from the banks: and in point of velocity a man walking fast on the shore could not keep up with a boat floating down the stream; under these circumstances the discharge per second was probably full 40,000 cubic feet at Tsetang, and this was more likely to be increased than decreased in progress to British Territory.

56. Now since the Tsang-po discharges into the Brahmaputra west of X, we have to select a recipient from the 4 tributaries mentioned in article 55. I put the (Luhit + Tenga) out of consideration, because to reach it the Tsang-po must so to speak run through the Dihāng and (Dibang + Sesiri), and of the remaining 3, the Dihāng alone is of the estimated volume of the Tsang-po, the other 2 being only  $\frac{1}{4}$  or  $\frac{1}{3}$ rd the required volume. Hence the conclusion I arrive at is, that the Tsang-po and Dihāng are identical; and in fact, if this is not the case, there appears no answer to the question how comes the large discharge of 55,500 cubic feet to be created in the Dihāng? Believing that geographers will coincide in the identity above indicated, I conclude my remarks by pointing out that the solution thus afforded by the explorer gives additional value to his remarkable explorations.

57. I can notice the tables attached, only briefly.

Table I gives the *individual* values of latitude, and so affords evidence of the accuracy attained by the observer.

Table II exhibits the heights determined, all from boiling-point observations of a thermometer in the usual way. The aneroid barometer unfortunately got out of order and the observations taken with it being useless are not given.

Table III gives air temperatures, affording points for discussion which however I am unable to enter into at present. It is likely to prove useful for reference.

Table IV. I have here collected the explorer's estimates, for each *place*, of the facts given; which relate to the strip of country say 2 miles wide, on either side and along his route.

Table V is an abstract of Table IV for each *district*: the last column gives the estimated population per square mile along the strip of 4 miles in width: excluding the uninhabited portions of the Chang-tang, the total length is 2,470 miles, which for a strip of 4 miles wide gives an area of 9,880 square miles, and hence for a population of 127,883 souls, the average per square mile is 12·9 souls: this however *includes* the principal towns: but otherwise, south of the Chang-tang generally, the population is estimated by the explorer to be about the same as along his routes, so that for the whole of this area generally, 10 souls per square mile would probably not be too high an estimate.

The Vocabulary will be found useful.

58. The country south of the Chang-tang, it will be seen, is watered by the Ja Chu, the Di Chu, Chiamdo Chu and the Giam Nu Chu; all large streams, of which the Di Chu is the largest: in point of fact however the people make no use of the rivers for irrigation; nor are the streams suited for navigation even down to a considerable distance below the explorer's southern route. I am unable, from want of time, further to discuss particulars, which will be found in the Account of the Explorations.

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\* Determined by the late Captain H. J. Harman, B. E., and given on Sheet No. 1.

### *Note on trade routes and the tea trade.*

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The explorations by Pandit Kishen Singh in 1879-82 suggest considerations, regarding certain trade routes in Tibet and subjects connected with the same, which appear of sufficient importance to be noted here, in view of their proving useful for promoting trade between Tibet and India and also in other respects. I therefore put together here the following facts elicited in conversation with the Pandit, remarking once for all, that regarding Tibet as made up of two portions, generally east and west of the meridian of Lhāsa, the portion here particularly contemplated is that recently visited by the explorer, *i.e.*, the *eastern* portion.

2. I begin by mentioning the Chinese tea gardens east of Ta-chien-lu; these supply the whole of the tea consumed in eastern Tibet, besides furnishing enormous quantities to Lhāsa for local use and for despatch westward and southward, including Bhutān. Beyond the obvious fact that these gardens must be very extensive, and that they are said to commence some 140 miles east of Ta-chien-lu, nothing more can be added here; except a few words as to the preparation of the rectangular blocks or bricks, in which form all the tea for Tibet is prepared in these gardens. Assuming that the green leaf has as usual been manufactured into the ordinary tea in dry leaves, a certain proportion of the quantity to be converted into bricks is boiled in water over a fierce fire and for a considerable period; this yields an intensely strong tea-juice or concentrated extract, which moreover has the required property of being very adhesive: the remaining portion of the leaf-tea is next worked into a stiff pudding with the tea-juice and forced into rectangular moulds, from whence the blocks taken out are now in the shape of long, solid bricks. These bricks dry in the shade or store-rooms, and are fit for transport a few weeks after preparation. A tea-brick is called *Dum* or *Barka*.

3. The next step is packing: this is done in packets of four *barkas*, which are placed lengthwise in a line and abutting one another; some leaf-tea is strewn around and the whole enclosed in yellow paper; this yellow package of four *barkas*, called a *khotu*, is now slipped into a wicker-work, hollow, rectangular tube, made for the purpose, and secured there; after which it is ready to be carried to Ta-chien-lu.

4. The tea carriers may be described as a very nationality of porters, of whom men and women alike are able to carry great weights and over very difficult paths, and even children acquit themselves creditably in the same way. Porterage has been their occupation for generations, and in fact they are the *only* porters in eastern Tibet: the ordinary natives (*Bodpas* and *Khāmpas*) are but indifferent weight carriers, while the nomad or *Dokpa* of the Chang-tung is of but little use once off his horse. So the transporting of tea from the gardens to Ta-chien-lu is performed entirely by the *Giāma Rongbas*, who inhabit the intervening tract of country (perhaps some 100 miles square and called *Giāma Kong*). This tract is mountainous and precipitous, and all the tea traffic is carried along a mere footpath, which is tortuous, of needless length and runs up and down steep inclines, so that it is quite unfit for beasts of burthen: notwithstanding, the *Giāma Rongba*, man or woman, will sometimes carry up to even 3 maunds per individual all the way to Ta-chien-lu, performing say 7 miles daily or the journey in some 20 odd days. As already said, the whole of the tea consumed in eastern Tibet, and also that despatched onwards from Lhāsa is supplied by these gardens: this *must* be a considerable total weight, and as all of it is carried on the backs of the *Giāma Rongbas*, it follows, that these people must be correspondingly numerous. The tea is delivered at Ta-chien-lu at the risk of the tea-planters, who take payment in coin: the purchaser at this place removes the wicker-work packing, and the *khotu* is then sewn up in leather; it is now fit to be transported on yaks, *jomos*, mules or horses alike. These animals all carry wooden pack-saddles, from which the *khotus* are swung on opposite sides by leathern straps: the yak carries only four *khotus* or from 1 to 1½ maunds, and travels under 10 miles daily: the *jomo* or mule carries eight *khotus* or about double the weight of the yak and travels say 15 miles per day.

5. The tea purchases at Ta-chien-lu are made with one of two objects; *i.e.*, for transport direct to the great emporium at Lhāsa, or for sale in large quantities to tea-dealers along the two trade routes between the two towns; in the former case payment at Lhāsa is made in coin, but in the latter the coin is largely supplemented by barter: the tea-dealers in turn retail to small tradesmen mostly in barter, and between these and the people barter necessarily prevails. So that, notwithstanding that silver currency to a certain extent does obtain, *the* currency of the



people is *brick-tea*. This fact at once proves the universality of the use of tea in the country (Tibet), a fact none the less striking, that the unit of exchange, *i.e.*, a brick of tea, is not national but foreign. Even the lawless *Dokpa*, or black-tent nomad, will accept payment in brick-tea for any thing he possesses, and in a word any person in eastern Tibet, if not drinking his native malt liquor, drinks tea every day and all day; he scorns at a water drinker and will take none of that element himself: as a common usage a strong decoction of tea is always ready to hand in most households, so that, diluting this with hot water, a Tibetan can obtain the required draught at short notice. Conjectures on the subject are unavoidably of limited weight, but at a guess, the explorer thinks that a married couple with 2 or 3 children, if *economical*, will consume about a seer of tea monthly.

6. Several kinds of tea are sold at Ta-chien-lu: the principal kinds are these; the prices being stated in Indian money and at Ta-chien-lu, and the weights by estimation in Indian seers:—

*Rigārkārpo* weighs about 3 seers per brick, price some 3 Rs. per brick.

<i>Surti Chuba</i>	"	2½	"	12 As.	"
<i>Chuba</i>	"	2½	"	8 As.	"
<i>Giātpa</i>	"	2	"	½rd Re.	"

besides, there is the *Jāngjāpari* leaf-tea in about ½ seer packets at 4 or 5 As.: of all these the *Rigārkārpo* is considered the best: the *Giātpa* is made up of refuse including twigs and has the least strength or flavor. The *Chuba* is probably most generally consumed. Decoction of the tea seed is also appreciated, especially at large entertainments, not only for its good qualities but because it is quickly prepared.

7. This brings me to the two trade routes from Ta-chien-lu to Lhāsa, on one of which at least tea is practically, if not quite absolutely, the only article of traffic: the route mostly for tea is the northern route and is called the *Jānglam*; it passes by Kegudo, through the Hor country (of which nothing can be said), by Mora lake and so down *via* the Dam to Lhāsa. The southern route is called the *Junglam* or Government road along which the officials and the post travel between China and Lhāsa; it runs through Gartok, Chiamdo, Lho Dzong, and so to Lhāsa. Of these the *Jānglam* conveys far the larger traffic: the *Junglam* is used by traders who are mostly *resident* on this line, as the Jongpons (or governors) of Li-tang, Ba-tang, &c.

8. Following first the *Jānglam*, it passes through cold tracks, and largely over the Chang-tang, that marvellous expanse of high land, dwelt on at some length in my Summary and Discussion of the Pandit's Explorations\*: here the yak and his less timid descendant the *jomo* (besides some mules, &c.) breed and multiply almost innumerable, hardly needing more care than does the abundant grass growing round them; so that, after deducting a certain number for affording sustenance in flesh and milk to their owners, there still remains an enormous surplus of these beasts, representing an almost unlimited amount of carrying power, which runs to waste. Some small portion of this waste has been utilized by the tea-trader in diverting his route northwards over the Chang-tang, and this demand is willingly met by the cattle owner who requires nothing more in return than a minute fraction of the tea which his beasts carry: time is of little consequence to all concerned; the drivers saunter along with their beasts, which graze as they travel, and once on the soft plain of the Chang-tang, the former absolves himself of all needless attention to his cattle, which for 2 or 3 days consecutively are never unladen, proceeding on their course feeding all day, lying down at nights under their loads and rising with them next morning to saunter on again: under these circumstances it is easy to see that the cost of carriage is almost nominal. The cattle breeding grounds are in the Jokchen and Yulung districts and the whole tract from Kegudo across the Hor country *via* Mora lake down to the Dam, only some 75 miles north of Lhāsa: the two districts first named carry from Ta-chien-lu to Kegudo, where the beasts are changed for others, which are succeeded by fresh batches at some place (not known) in the Hor country, and thereafter at will from the Mora lake downwards. Thus the trader proceeds according to his object, *i.e.*, direct to Lhāsa, or, marching as he does down the centre of the nomad, *i.e.*, camps in the Chang-tang, disposes of his commodity by replenishing the tea stocks *en route*. The distances along this line are as follows:—

				Miles.
Ta-chien-lu to Kegudo	...	...	...	440
Kegudo to Mora lake	...	...	...	290
Mora lake to Dam Chuchan	...	...	...	85
Dam Chuchan to Lhāsa	...	...	...	75
			Total ...	890

\* See also Index Map.

9. The second trade route runs along the *Junglam* or Government road from Ta-chien-lu to Lhāsa, i.e., through Li-tang, Ba-tang, Gartok, Chiamdo, Lho Dzong, Giamda, &c: here yaks and *jomos* are absent, and in fact would die from the rise in the temperature, and the carrying is done by horses and mules, which moreover are not obtainable *on hire* but are the property of the traders themselves; the route also runs through comparatively civilized tracts, where, if the people can afford to buy more tea, the expenses of the trader are also greater: the traffic is said to be considerable, and large herds of laden beasts are to be met, but it is not confined to tea, and, taken all together, the inference is that the tea carried by this route is more to replenish stock on the road than to supply the emporium at Lhāsa, where competition of the *Junglam* with the *Jānglam* and cheaper route appears impossible. In respect to distances by this route we have

				Miles.
Ta-chien-lu to Gartok	...	...	...	250
Gartok to Chiamdo	...	...	...	180
Chiamdo to Lho Dzong	...	...	...	110
Lho Dzong to Giamda	...	...	...	255
Giamda to Lhāsa	...	...	...	140
Total	...	...	...	935

10. It will be seen from the foregoing, that carriage by the *Jānglam* road must needs be cheaper than by the *Junglam*, because of the enormous carrying power on the *Jānglam*, not only available, but even running to utter waste; at the same time, as the *Jānglam* runs far north, the use of the *Junglam* as a tea route must be a necessity, to feed the demand in southern tracts. Thus, in considering the competition at Lhāsa, of tea from the gardens east of Ta-chien-lu and from India, it is the cheaper carriage by the *Jānglam* we have to take into account: this cost is obviously so small that it may almost be left out of reckoning: nor am I in a position to estimate it with much accuracy. For a rough approximation, the cost may be found thus. A driver is usually required to look after some 40 yaks, whose united loads may be set down at 60 maunds. The yaks would stand useless if not carrying tea, and working or idle they feed themselves; so that practically they cost the owner *nothing*, and this is the view he takes of the matter himself. The driver lives on the produce of the Chang-tang itself where he travels, and where flesh, milk and butter are exceedingly cheap; corn flour is a luxury to him, but even allowing him half a pound of this daily, with some tea, and remembering that he dresses in the skins of the beasts around him, 2 to 3 Rs. per mensem *must* be more than necessary for his keep. Now if the whole 900 miles may be travelled in 3 months, and we allow 6 months for a journey *including return*, the latter period is represented by at most  $3 \times 6 = 18$  Rs., on account of the driver, for 60 maunds; or say 3 maunds per rupee; and if to provide for wear and tear of saddles and leathern thongs, &c., &c., we even treble the amount, the result is that carriage from Ta-chien-lu to Lhāsa costs 1 rupee per maund for the 890 miles, or under  $\frac{1}{4}$  pie per maund per mile. The charge per mile for 1 maund by railway in India varies from  $\frac{1}{4}$  to 2 pies per mile.

11. As to the population (west of Ta-chien-lu and south of  $36^\circ$  latitude) in *all* Tibet and Bhutān, which consumes the Ta-chien-lu tea, that is a question to which no reliable reply can be given without more information than is at present available; in fact it is difficult to say how far east, west and south this tea is *used*, wholly or in part. But under certain assumptions it is practicable to find the areas required with moderate correctness, and from thence to argue to results for what they may be worth. The areas I proceed to find are (1) those of the nomadic portion of the Chang-tang (tinted yellow on the Index Map), and (2) of the strip south of it, which beginning at Tra-dom is itself bounded to the south at first by the British frontier and thereafter (including Bhutān) by the Tibet southern boundary (conjectural) back to Ta-chien-lu.

NOTE.—In addition to the Ta-chien-lu tea, which alone is used in Tibet, I might however mention the Siling tea (east of the Koko Nor): it is also in the brick form but much harder and can be powdered only by hard pounding: the Tibetans declare it is wanting in color and strength and will have none of it; yet the Mongolians use it exclusively by preference: so much for difference of taste, which in these instances *must* have been acquired by habit. The distances of the route Lhāsa to Siling are as follows:—

				miles.
Lhāsa to Giaro	...	...	...	208
Giaro to Di Chu Rab Dun	...	...	...	212
Di Chu Rab Dun to Jun	...	...	...	195
Jun to Koko Nor	...	...	...	185
Koko Nor to Siling	...	...	...	120
Total	...	...	...	915

The traffic along this route is small and is generally limited to a couple of *kāñlas* either way in the year, but no Siling tea is imported into Tibet by *kāñlas* or otherwise. By an odd arrangement this route is closed to the Chinese.

	Area of	Square Miles.
Nomadic portion of Chang-tang (tinted yellow on the Index Map) ... ..	...	234,000
Strip south of yellow tint down to British frontier and then (including Bhutān) following out the bar-cross-bar line (supposed Tibetan frontier) up to Ta-chien-lu ...	...	229,000
Total area ...	...	<u>463,000</u>

This total area excludes the Giāma Rong, and no doubt other large tracts to the east, with which this note has no concern; also Nepāl &c.; but it includes Bhutān: and it is highly probable that this total area is *less* than that area *west* of Ta-chien-lu where *the* tea is consumed. Now the average population along the routes followed by the explorer is about 13 per square mile as shown in Table V of Summary; but for the total area now under consideration, so far as I can ascertain and estimate, on the average 5 souls per square mile would probably be an *underestimate*; adopting this number,

Total population for total area =  $463,000 \times 5 = 2,315,000$  souls.

Again if we assume 5 souls to a family of the lower orders, and, as said in article 5, that an economical household of the kind will consume only 1 seer of tea per mensem,

We have, total annual consumption of tea in the total area

$$= \frac{2,315,000 \times 1 \times 12}{5} = 5,556,000 \text{ seers} = 140,000 \text{ maunds nearly.}$$

Or, as people like to think of tea in pound measure, the foregoing indicates that the consumption of tea in the area discussed is most probably *more than eleven and a half millions of pounds annually*, a result so considerable, that India would sensibly benefit by sharing in it to the extent of even a moderate fraction.

12. Coming now to the point; the question for consideration is competition between Indian and Ta-chien-lu tea in Tibet. There is no other opening into Tibet for Indian teas nearly as favorable as that to Lhāsa, so I assume that the question resolves itself into comparative cost of the two kinds of tea at Lhāsa\*; and it is certain that an emporium of the kind is an essential factor in the matter. But before briefly alluding to the cost of carriage of Indian teas, I first return to Art. 10, where it is shown that cost of carriage from Ta-chien-lu to Lhāsa cannot exceed 1 rupee a maund. Were there no other features remaining in that route to consider, I do not see that the subject of cost of carriage would be worth further discussion, because India could not possibly compete with the Chang-tang in this respect; and I repeat, my remarks refer only to cost of carriage, not to cost of manufacture, on which I do not venture to say a word. The feature remaining, is the difficulty the Ta-chien-lu tea has to encounter between that place and the gardens: here, as said, the road is very bad, and probably it will be left so for many years; the tea is all carried by human beings (the *Giāma Rongbas*) and the journey takes some 20 days: a man will carry say 10 *khotus*; a woman about 8 *khotus*; so the two may be said to carry 18 *khotus* or  $2\frac{1}{2}$  maunds per individual on the average. I cannot elicit directly what the cost would be expressed in Indian money†; I can only learn that payment is made mostly in tea (which is a fact for consideration) to the porters, who are poor as a class and easily satisfied; still a couple are said to consume the equivalent of some 6 Rs. monthly on food alone: if this be so, and the trip and return journey be set down at say 35 days, the charge *per individual* is probably not less (including say 2 Rs. saving) than  $(3/8 + 2) =$  say 6 Rs. for the month and five days; this for  $2\frac{1}{2}$  maunds gives some 2 Rs. 11 As. the maund; or to avoid too low an estimate, call the charge even 4 Rs. per maund from the gardens (generally) to Ta-chien-lu: next, adding 1 Re. from the latter place to Lhāsa, there results 5 Rs. per maund as cost of carriage from the Chinese gardens to Lhāsa. This, if correct, would be *the* charge, than which carriage from the Indian gardens to Lhāsa must be *less*‡, in order that these gardens should compete with advantage.

\* I make no doubt that this question has received consideration at far more competent hands than mine, and the same may also be said on several other kindred points, which I therefore touch on but very briefly. The subject however is of such great importance, that I do not exclude certain items here, which may (or may not) have already been discussed to better purpose.

† If not already known, no doubt full particulars could be obtained from the Jesuit Fathers resident at Ta-chien-lu; but conversion from payment in tea to Indian money is beset by several difficulties which may lead to erroneous conclusions: the conversion is not a mere matter of arithmetic.

‡ Unless indeed the Indian tea-planter can *manufacture* for less than the Chinese. As respects the Chinese, I cannot separate the 2 items involved (apart from carriage from the gardens to Ta-chien-lu), i.e., (1) cost of manufacture all told, (2) profit to tea-planter (who it will be remembered delivers at Ta-chien-lu); but calling the 2 items added together "total value" then we can make a guess at this, per pound as follows. Take the *Chuba* tea, said to be most commonly in use, (article 6): the price at Ta-chien-lu for 5 seers is Re. 1, and hence for 90 seers (a porter's load) the price is Rs. 18: deduct 4 Rs. (article 12) to porter, and there remain 14 Rs. for the 90 seers, which give at the rate of 1 An. 3 pies per *pound* for the said total value. Or if we include portorage with the said total value, then 90 seers yield Rs. 18, which give 1 An. 7 pies per *pound*. If this be true, India must exercise rare ingenuity and economy to compete successfully in Tibet.

13. Now as to the Indian gardens, a great deal is necessary before they can compete in carriage, the first and most important consideration being the best line of communication with Lhāsa; this should obviously pass many miles east of Darjeeling and be facilitated by rails of some kind as far north as practicable; beasts of burthen would answer for the remainder: but I repeat, the line must I think run considerably east of Darjeeling, it must be helped to the utmost extent by rails, and for the remainder carriage by human agency must be entirely eliminated. What comes of carriage by man in contrast to cattle-carriage may be illustrated by the following rates which I am told now obtain from Darjeeling to Lhāsa.

			per maund Rs. A.
Darjeeling to Phāri, say 90 miles by road; carriage by men at			
Rs. 5/8 for 1½ maunds	...	...	... = 3 11
Phāri to Lhāsa, say 217 miles by road; carried by cattle at			
Rs. 1/8 for 1½ maunds	...	...	... = 0 14
Total, Darjeeling to Lhāsa	...	...	... = 4 9

which gives, carriage *per mile per maund*

By men	...	...	...	...	...	7·87 pies
„ cattle	...	...	...	...	...	0·77 „

*i.e.*, man-carriage is more than 10 times as expensive *there* as cattle-carriage. Further, the carriage from the Chinese gardens *vid* Ta-chien-lu to Lhāsa (some 1030 miles) being estimated at Rs. 5 per maund, the carriage from Darjeeling to Lhāsa (say 310 miles) is as above Rs. 4/9 or but 7 As. less, leaving the latter small amount only as a set-off against the carriage from the Indian gardens to Darjeeling. These illustrations are perhaps worth exhibiting, at the same time I do not mean that the route for Indian teas to Lhāsa was ever contemplated to run *vid* Darjeeling.

14. A few words too at a venture may be added on Indian tea. There are many hundreds of acres under cultivation in the valley (Dehra Dūn) below this place, but so far as I am aware no one there *at least* has ever attempted to imitate the Chinese brick tea; and yet if India is to compete with Tibet, there can be no manner of doubt she must do so with the self-same article Tibet is accustomed to, *i.e.*, tea in *bricks*. Moreover, it is easy to see, that the hard compact brick is a box in itself, and offers resistance to degeneration from atmospheric causes by means both effective and economical. Nothing but failure can result from trying to force leaf-tea on people, who, like the semi-civilized Tibetans, are accustomed to tea in brick; and in a word it is difficult to imagine any form so portable and exactly suited to the circumstances, in Tibet as well as elsewhere, than tea in brick.

15. But besides the subject dealt with in the foregoing, there is another if possible of even greater importance, which is almost wholly neglected. I allude to trade in the soft, costly wool called *Pashm*, or shawl-wool. Whatever else the Chang-tang may fail to grow there can be no doubt that hundreds, or even thousands of maunds of *Pashm* are necessarily produced there every year and *wasted*. *Pashm* can grow only in cold countries, and otherwise the conditions prevailing in the Chang-tang are exactly suited to its production by means of the herds of all kinds of innumerable animals bred there; but Tibetans neither know its value nor how to collect it; and in fact the industry has yet to be taught them, as has already been done in a few localities, including Manasarowar lake, which feed Kashmir. The conclusion is obvious: if Indian tea could be exchanged for *Pashm*, if not for coin, the advantages accruing to both Tibet and this country would be very considerable indeed.

*Translations from P. Kishen Singh's Diary and Notes.*

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NOTE.—The bearings hereafter given are all reckoned from the true north; to obtain them, all the original magnetic bearings have been increased by  $2\frac{1}{4}^{\circ}$  for variation of needle.

I left Darjeeling on the 24th April 1878, accompanied by my faithful companion Chambel and another servant Gangārām engaged for the exploration, and reached the right bank of the Tista river at night-fall. The next day I arrived at Kālimpong, a small *būzār* of 15 or 20 shops, where a market is held every Sunday; and we halted for three days in order to collect supplies for the journey. On the 29th April we arrived at Pedong village, on the 30th at Rinag, and on the 1st May at Chujāchen village; a heavy fall of rain detained us here for a day. On the 3rd May we reached Lingdam, on the 4th Pangdam and on the 5th Gani, all three being customary halting places. On the 6th we crossed the Jelep mountain and arrived at Nāthang, also a halting place. Snow now began to fall and detained us for three days. On the 10th May, we arrived at Kubug, a halting place, where grass is abundant, and where the Tibetan boundary is reached. The villagers of Rinchen Gāng migrate here for the months of October, November and December to pasture their flocks and yaks. On the 12th May, crossing the Kubug La or Bodh La (pass), which was covered with snow to a depth of three feet, we arrived at Langta, a halting place. Here firewood (from a kind of fir tree) and grass are abundant.

2. The 13th May brought us to Rinchen Gāng (invaluable rock), a village of 30 houses. Towards the west and up an ascent of about 500 paces there is a *gom-pa* in which some 10 or 12 *Dabas* and a Lama reside. They occupy themselves solely in reading religious books and repeating hymns aloud. This village lies in the Domo *patti*; all the villages of this *patti* are situated on the banks of the Ammo river, which flows from the north to Lho or Bhutān. They are sparsely inhabited as the soil is poor and yields but little corn, so that only one crop is raised annually. *Ne, dau*, turnip and potato are grown. We remained here two days to collect supplies and re-pack our merchandize.

3. Leaving Rinchen Gāng for Galing Kha on the 16th May, after travelling for some 3 miles, we reached Chum-bi on the Ammo river, the residence during the summer season of the Gyalbo (Rāja) of Dainjung or Sikkim. It is a large, *paku*, square, three-storied palace surrounded by a wall of rubble stone, having two large gates, one to the north and the other to the south. There are some 40 houses close to and south of the palace. Thence the road crosses a wooden bridge about 40 paces in length, close to Chum-bi; and 3 miles further it brought us to the junction of two streams, one coming from the N.W. and the other from the N.E., which uniting flow southwards under the name of the Ammo river. Following the left bank of the N.E. stream we reached Galing Kha village containing 40 houses. On the right bank of the same stream, opposite to Galing Kha and close to Rupu Kha village, there is a *gom-pa* called Dong Kar. The last named village is the most northern of the Domo *patti*. Dāg Kārpo, a halting place, was reached on the 17th May. The route from Kubug to this place is very narrow and rugged.

4. On the 18th we reached Phāri, a fort on the top of a small solitary hill about 1,200 paces in circumference at base. The fort is some 200 feet above the surrounding plain, and has steps leading up to it on the east. It has no tower or enclosing wall. The country round is level for about 4 miles but not cultivated. There are some 200 houses to the S E of the fort. Wood for fuel is not procurable, but its place is supplied by dried dung of the domesticated yak. The Jemo-Lha Ri (female god peak), otherwise Chumalhari hill station of the Great Trigonometrical Survey, is visible from the surrounding plain. About 12 miles to the west are 12 *Chuchans* the waters of which are reputed to possess different healing properties, so that they are said to cure 12 different diseases. The people of this neighbourhood very seldom seek medical treatment, but when ill they are content to bathe for a week or so in the springs.

5. Two Jongpons (a Tibetan expression which literally means the fort-master), the farmers of the taxes under the Lhāsa Government, bear rule here for periods of three years. Their duty is to guard the road and levy taxes, equal to one-tenth the value on any merchandize which passes, and to decide cases of a civil and criminal nature. Gangārām having fallen ill detained us here for three months.

6. Leaving Phāri on the 16th August we halted at Chu Gia. Thence crossing a small mountain we passed the night of the 17th at Tu-na, a village of 10 houses, and on the 18th reached Ka-la-shar, a village of 60 houses. Here we met with cultivation. Some 18 miles from Tu-na and to the right of the road lies the Ram or Bām lake, the water of which begins to freeze about the middle of October, and a month later it is so hard frozen that none flows out; a thaw usually sets in about the beginning of February. Near Ka-la-shar and to the west is another lake called Ka-la. The villagers of Ka-la-shar spend a good deal of time in fishing. They wade out into the lake, which is not deep, for a long distance and catch numbers of large fish in nets dragged by four men. The fish are dried in the sun and so prepared for the market. On the 19th we halted at Sa-ma-da, a village of 10 houses with some cultivation about it. The route from Dāg Kārpo to Sa-ma-da is wide, smooth and level. On the 20th we arrived at Trang-go, having passed a small hot spring on the road.

7. The 21st August saw us at Gyāntse, a small town on the right bank of the Pen-nang-chu (Nyang river). The town is situated about two small hills which lie east and west and are united by a saddle; the western hill is further connected with the chain of mountains to the north. On the eastern hill, which is about 600 feet above the surrounding plain, is a large fort similar in construction to that at Phāri; and on the western hill a *Gom-pa* inhabited by 500 Dabas. In this *gom-pa* there is a *Churtan*,\* called Pāngon Churtan, which is considered by the Tibetans a most holy place. Besides the fort and temple there are about 1,000 dwelling houses on three sides of the double hill. Woollen cloth called *Nhambu* is manufactured. There is a large market, and traders from Nepāl and China reside here. We remained for six days to exchange our articles of merchandize. The road from Sa-ma-da to Gyāntse is rugged and stony.

8. On the 28th Upsi village was reached where there is a large *Giakhang* or Chinese stage-house; and on the 29th we halted at Ra-lung village which also possesses a Chinese stage-house. The road from Gyāntse to this place is smooth, wide and level. On the 30th the road crossed the Ra-lung La or Ka-ro pass by an easy ascent and brought us to Dza-ra, a Chinese stage-house. To the north of the last named pass lies a very high peak, near the base of which is a small glacier. On the 31st we reached Nang-kar-tse stage-house, close to the Yam-drok Tso or Palti lake. This lake was the largest I had met with. It is like a horse-shoe in form and almost encircles a small hill on which is a large temple dedicated to *Dorje Phāmo*. A number of villages are said to be situated on the hill. The lake contains a great number of fish, not larger than a span, which are sold in Lhāsa. They are caught by angling through holes in the ice.

9. On the 1st September, travelling along the northern shore of the Yam-drok Tso, we reached Pe-de (Fort) stage-house, and on the 2nd, crossing the Kam-pa pass, arrived at Kam-pa-par-tse stage-house. The pass is on the boundary of the Tsang and U divisions of the U-Tsang province. On the 3rd, a mile distant from the last halting place, we struck the right bank of the Tsang-po (Brahmaputra) river which we crossed at Chak-sam (iron bridge at the rocky bank) by a bridge and arrived at Chu-shul (Fort) stage-house. The bridge is formed of two iron chains, one on each side: from the chains thick ropes are suspended to the depth of four yards: by these ropes planks, three feet long and one foot broad, are supported lengthwise so as only to admit of one person crossing at a time. The chains are stretched very tight† and are fastened round huge blocks of wood buried beneath immense piles of stone: the length of the bridge is about 100 paces. On the 4th Netang on the right bank of the Kyi Chu, was reached: the river is about 80 paces wide. On the 5th September 1878 we arrived at Lhāsa. Here we replenished our stock of merchandize.

10. After spending some time in Lhāsa, waiting for a caravan to start for Mongolia, I heard that one was about to leave. I went at once to the Garpon or *Sardār* of the caravan and enquired the date of its departure, but could obtain no definite answer beyond this, that the caravan might start about the month of February. I pressed him to fix the date but failed. "My long experience has taught me", he said, "that when the date is fixed, the robbers' spies who are here, communicate it to their masters, and then the caravans never arrive safely at their destination." In November he sent for the other traders and myself and begged us to excuse him from going to Mongolia on account of his being under a heavy debt of 500 *tamimas* or *kurs* (1 *kurs* = 156 rupees of Indian coin) which he must liquidate before leaving the city. This was very discouraging as we had no other experienced man to lead us. At last we

\* *Churtan* or *Chorten* is a colored building of varying height, rising in rectangular blocks, each diminishing in size. On the centre of the top-most block there is a carved wooden tapering cone, on the summit of which is a golden crescent and ball. The central portion is hollow and in course of building, images, religious book and other objects of veneration are placed within.

† Nevertheless there is a sensible curve: when we crossed, the surface of the water below the centre of the bridge was about 50 feet, while at the two ends it was much more.

agreed to subscribe and pay his debt. After four months further delay he gave up the idea of conducting the caravan, and I had no alternative but to wait for another. In August one arrived from Mongolia; and as half of this *Kāfila* was to return immediately, I went to the leader and requested him to take me with him; he consented and we left Lhāsa on the 17th September 1879.

11. During my stay at Lhāsa I employed myself in learning the Mongolian language. Moreover during June and July of 1879, I took a series of air thermometer observations.

12. Lhāsa city, about 6 miles in circumference, is situated in a tolerably level plain surrounded by mountains. It is on the right bank of the Kyi Chu. In the centre of the city stands a very high, square temple called *Jhio*, the roof of which is covered with golden plates. The images in it are numerous, but the most important of them are of Jhio Sākya Muni, and of Palden-Lhāmo or the goddess Kālī of India. The former is said to have travelled to Tibet from India where he is called Sākya Muni. The idols are richly inlaid with gold and precious stones, and have various ornaments round their necks. Near the temple are situated the court-house, the police station and the treasury; the temple and the three buildings are surrounded by a street 30 feet broad, on either side of which are shops kept by Tibetan, Chinese, Nepālese, Kashmīri and Azimābād (Patna) merchants. Bhānāgshio, Tumsikāng and Rāmoche are the streets where foreign traders (new arrivals) generally find quarters, and Wāngdusiga is an open square where a large market is held every morning for the sale of all kinds of articles.

13. At the western extremity of the city and on a small hill is a medical school called Chiākpori, having some 300 *Daba* students. There is no fixed period of study, but as soon as they become efficient they obtain appointments, either at the recommendation of the head teacher or by their own exertions. The school is also the repository of many kinds of medicines for the use of high officials. To the north of the school and at the base of a mountain is a large palace, the residence of the present Gyalbo or Rāja. To the north-east of this palace is a large and strong fort, built on a low isolated hill with winding steps leading to it from the north and east, and named Po-ta-la or Chai, the residence of Kiāmkuṅ Ring-bo-che or the Lama—the chief spiritual and secular adviser in Tibet. He is supposed never to die, but his soul transmigrates into another body. When he dies, his body is placed in a coffin and after some days is buried, and a hollow monument of metal plated with gold is raised over the spot; this monument is called a *Kutung* and resembles a small *Churtan* in shape.

14. The new Lama is said to appear within a year from the date of the last Lama's death. His birth is recognised by the contemporary miracles \* at or about his birth-place. His parents inform the nearest chief official, who, after holding a strict enquiry into the matter, brings it to the notice of the Gyalbo who then represents the Lhāsa Government. Then the private attendants of the late Lama immediately repair to the house, in order to test the veracity of the report by signs which they profess to know. When the birth of the Lama has been fully established by this corroborative evidence, some of the chief officials go to his birth-place in order to remove him and his parent to some *gom-pa* or temple near the city, where they are lodged till the auspicious hour arrives for his being brought with great honor to Po-ta-la fort. As soon as he is of age, civil and ecclesiastical affairs are entrusted to him. When miracles are reported to have taken place at the birth of more than one child, election is made by casting lots.

15. To the north of the city stands a large *Churtan*, called Giāng Bunmoche, erected in honor of a Tibetan hero who is said to have killed 100,000 of his enemies (Chinese) on the spot. Close to it is a temple called Rāmoche Jhio, a sacred place of worship.

16. During the first month† of the Tibetan year all the gods and goddesses are supposed to be present in Lhāsa, and a large gathering of Tibetans takes place. Some of them come in order to pay homage to the idols, and others simply as spectators. All the *Dabas* and their head Lamas from the Ser-ra, Dre-phung‡ Gaden (Galdan) Gom-pas go there in order to unite in prayers for the future welfare of the country; their expenses during the month are borne by the State. During this period the city is governed by the Lamas of the Dre-phung Gom-pa, whose will becomes the supreme law for the time being: they inflict arbitrary punishments for trifling offences. Such of the richer classes of inhabitants as may have in any way incurred their displeasure leave the city and live in the suburbs. The poorer classes who are always dirty and never change their clothes, now sweep and whitewash their houses through fear of being punished

\* Among the strange events may be mentioned the following:—The blossoming, in the immediate vicinity of the birth-place, of fruit trees some months before their usual season; the casting of two or more young by animals which as a rule do not cast so many at a birth; and the sudden recovery from fatal illnesses of persons coming in contact with the new born child.

† The month begins about our mid-February.

‡ These are *Gom-pas* about 3 miles W. and 25 miles E. of Lhāsa: the latter is reckoned the most ancient of the monasteries belonging to the *Giukpa* branch of the *Nangpa* sect of Buddhists.

by the Lamas for their uncleanness. So long as these Lamas govern Lhāsa, they are feasted at the public expense or by the richer people and are entertained with sports. On the 2nd day of the new year (say the middle of February) all the inhabitants gather together to witness a feat performed by two men\*, each of whom in turn mounts on a wooden saddle and slides down a strong rope fastened from the fort walls to a post buried about 9 feet in the ground. Fifteen days after this the great festival of *Chionga Chiopa* is celebrated.

17. Another festival is held during the next month and continues for 10 days; it is called *Chongju Sawaiang*. During this festival a Tibetan of a certain tribe is summoned by the Lama; his face is colored half black and half white and a leather coat is put on him; and he is immediately turned out of the city, and ordered to go to Tsetang, *via* Samaye, where he resides for the year. At Samaye he is obliged to remain for seven days, and to sleep at nights in a solitary room (in the *Gom-pa*) called the Gate of Death, which is filled with skins of huge serpents and wild animals, images of *Rakshhas*, &c., all calculated to excite feelings of terror in the individual. During his seven days' stay he exercises despotic authority in Samaye, and the same during the first seven days of his stay in Tsetang. The Lama and the people give him much alms because he is believed to sacrifice himself for the welfare of the country. It is said that in former times the man who performed this duty died at Tsetang in the course of the year, from the effect of the *mantras* (prayers) repeated by the Lamas and *Dabas* after his departure; but now he survives and returns to act his part the following year.

18. The Government consists of one Grand Lama, one Gyalbo who is also a Lama, four secretaries and five counsellors. The Lama is the chief ruler in Tibet, and is consulted in cases of emergency; he is the last resort of appeal, and his decision is invariably unquestioned. The Gyalbo is his prime minister, and next to him in rank, and is elected from among the head Lamas of one of the four *Lings* (divisions) named Kontyaling, Chumuling, Tankyāling and Chocholing. His soul is also supposed to transmigrate into another body.

19. Two other important officers, called Ambāns, who are representatives of the Chinese Government, are stationed here; they are appointed for a term of three years.

20. Whenever any dispute arises between two parties of foreigners of the same nationality, who domicile there, it is decided by the chief man among them; but when the parties are of different nationalities, inquiries are conducted by the Tibetan rulers who decide the case, and if necessary assign punishment, and deliver the offenders to their respective headman for the execution of the sentence. Robbery is frequent in the city as thieves are assisted in the disposal of stolen property by the Nepālese merchants.

21. The number of males in Tibet is very small in proportion to the other sex. It is considered a religious duty for parents to offer their firstborn male child to be brought up as a *Daba*, and frequently the younger male children also enter this order of their own free will. When they grow up they are not allowed to marry, nor to cohabit with women.

22. The manners and customs of the Tibetans are nearly the same as those of other hill tribes. The practice of polyandry is common, four or five brothers having one wife. As a reason for the practice I was told that when there is only one woman in a family all the members lived peaceably together, while in the other case they are obliged to separate. The marriage ceremony is conducted without much formality. Three forms of marriage are recognised by them: first, when a girl is of age, she elects her consort without consulting her parents or near relations; secondly, when the parents of a girl select a husband for her, they then retain the couple in their house; thirdly, when a man selects a wife for himself he takes her to his own house. The women are free and independent, and are very serviceable and painstaking; maid servants are numerous and can be obtained on nominal pay.

23. Three dialects are spoken in Tibet. *Khām Kai* or the Khām dialect of the inhabitants of the province so called to the east of Lhāsa; *Bodh Kai* of the people of the U-Tsang province; and *Doag Kai* of the nomads of Ngari Khorsum. Of these three, the second, which is spoken in and around Lhāsa, is polished and is the language in which most of their sacred and other books are written.

24. The principal articles of diet are:—*Sattu* (parched grain ground into flour) and Nepāl and Bhutān rice, fish, goat's flesh and other animal† food commonly used by man, tea, and beer made from barley or *ne*, and fermented by the addition of some kind of spice; this is known all over Tibet under the name *chhang*. The latter is kept in closed earthen vessels‡ for some days, and is either drunk in that state or a kind of spirit is distilled from it.

\* These men are always chosen from a village in the vicinity of Shigātse.

† Not omitting that of hog, oxen and yak.

‡ These are earthen vessels which have undergone a special preparation by having the bark of certain shrubs previously steeped therein in order to render them air-tight: and as it costs some trouble to make a really air-tight vessel, it is much valued by the owner.



25. The climate of Lhāsa is very healthy, and no contagious disease is ever known to prevail. Small-pox once raged there some 40 years ago when numbers of the people died; the inhabitants are very much afraid of it, believing it to be incurable. Inoculation, as a preventive, is unknown, and even if recommended by foreigners is not adopted.

26. One crop only is raised in Tibet; this is sown in April and reaped in September. The chief articles of produce are:—wheat, *ne* (a kind of barley), the Indian and Chinese pea, *taichun* (a kind of pulse), *pekang* (a kind of mustard) and *dau* (a kind of grain). The edible roots are the potato, turnip, radish, &c.

27. Buddhism is the religion of the country; there are two sects, one named *Nangba* and the other *Chiba* or *Baimbu* (*Pembo*). The former is distinguished by its members circumambulating temples keeping them on their right side, whilst the latter walk round in the opposite direction; this is one of their religious ceremonies. The *Nangba* sect has subdivisions named *Ningma*, *Sakia*, *Gāda* and *Gilukpa*. Corpses of all but Lamas are taken to the top of a mountain named *Dhoto* which is set apart conveniently in the vicinity of villages and towns; here they are cut in pieces and thrown to kites and crows by the relatives and friends of the deceased, and this act is held in much esteem by those performing it.

28. The nobility is an hereditary one. The following are the chief families:—Sandu Photāng, During, Seta, Bhandi Shia, Raga Shia, Lhalu, Yutok and Poti Khānsa. A noble is called *Dunkur*.

29. On the 17th September 1879, we left Lhāsa and started for Mongolia. The caravan included 105 souls, 60 of whom were Mongolians of both sexes and the rest Tibetans, including my party of six. Three-quarters of a mile from the Rāmoche *Jhio* temple in Lhāsa is a garden named Dabchilinga and the same distance further and on the left of the road is a small fort built for the Chinese soldiers, to the east of which is a parade ground named Dabchi, where the Tibetan troops twice a year display their military skill before the Ambān. A mile eastward from Dabchi is Chiāngro village (10 houses). At the distance of a mile from the fort and bearing  $337\frac{1}{2}^{\circ}$  is a temple called Ser-ra Gom-pa, containing 5,500 *Dabas* for whom food is provided by the Lhāsa Government. Two miles further the road crosses a small stream, which issues from the Pen-po-go pass, and flowing to the south falls into the Kyi Chu; 50 paces to the east is Parisīga, a hamlet of 5 houses, and on a spur of the Pen-po-go mountain, about 500 paces to the west, is a temple, called Kechāng Gom-pa. Three-quarters of a mile further the same stream is re-crossed. Hungsīga village, four houses, is 50 paces to the east, and a *Romkanq* or cemetery, where the Muhammadans of Lhāsa bury their dead, is 50 paces to the west. Some 450 paces to the west of the cemetery is Khutho Gom-pa on a spur of the Pen-po-go mountain. About  $1\frac{1}{2}$  miles further and to the left of our route is Gākānāka Chenkang, a temple dedicated to one of the passionate and vindictive gods. A *nāla* running from the west joins the stream (which flows along the road) about  $1\frac{1}{2}$  miles north of the temple. Continuing our journey for about  $1\frac{1}{2}$  miles we reached Lingbu Dzong, a ruined fort, where we stopped for the night. The road is very good for 4 miles, the remaining part of it is stony and rugged, but having an easy gradient. Forage is abundant.

30. The next day, after a difficult ascent of about 2 miles by a rough and stony road, we reached the Pen-po-go pass. The range bearing this name runs from the east. Boiling point observations were taken here (height 16,320 feet). No trees were visible but a small kind of grass covered the whole range; from the pass the descent is precipitous for about  $2\frac{1}{2}$  miles to a stream which crosses the road towards the left. About  $5\frac{1}{2}$  miles further down we reached Baya, a small village; the stream re-crosses the road towards the right about a mile below the village and flowing for about 2 miles at a bearing of  $67\frac{1}{2}^{\circ}$ , joins the Phembu Chu (Pen-yu-ne) stream. About  $1\frac{1}{2}$  miles from the village we found two temples, one called Langta Gom-pa, containing 50 *Dabas*, about 500 paces to the east, and the other Nālenda Gom-pa, containing 100 *Dabas*, a mile to the west. About 3 miles from Baya village the road crosses the Phembu Chu (Pen-yu-ne) stream,  $1\frac{1}{2}$  feet deep and 15 paces broad, flowing from the west; this stream, about 20 miles to the south-east, joins the Kyi Chu: near the junction is a temple called Te-gang, inhabited by about 250 *Dabas*. A mile to the north-east of the place where the Phembu Chu stream was crossed, another stream issuing from the Cha or Chiāg pass to the north, falls into that stream: 3 miles beyond the stream is Debungsīga or Naimār, a village of 20 houses where we halted for the night; it lies in the Pen-po *Patti*. This locality is well cultivated, and the produce finds a ready sale at Lhāsa. The fields are watered by irrigation cuts led down from the Phembu Chu and other smaller streams.

31. Leaving Debungsīga on the 19th and proceeding for about  $2\frac{1}{2}$  miles along the right bank of the stream from the north, we arrived at a village. About three-quarters of a mile from the village and bearing  $86\frac{1}{2}^{\circ}$  is a fort called Lundub Dzong with 50 houses around it. Two Jongpons, Tibetan officers, who reside in this fort, have charge of the Pen-po *Patti*, extending from the Pen-po-go to Cha passes.  $1\frac{1}{2}$  miles further, at a distance of three-quarters of a mile from the road and bearing  $82\frac{1}{2}^{\circ}$ , there is a *gom-pa* containing 50 cells. Three miles higher

up is a small village to the west and  $1\frac{1}{2}$  miles further another small stream flowing from the east falls into the *nāla* which issuing from the Cha pass runs parallel to the road to the right:  $1\frac{1}{2}$  miles onward it crosses the road to the left. Half a mile further up, a small stream from the west falls into the *nāla*, now running parallel to it on the left. After an ascent of  $2\frac{1}{2}$  miles, the last half mile of which is steep, we arrived at Cha pass, where boiling point observations were taken (height 15,840 feet). The Cha range runs from the west. After an easy descent of  $\frac{2}{3}$  of a mile, a stream issues from the left and flows towards the north and  $1\frac{1}{2}$  miles further on crossed our route towards the east; three-quarters of a mile further it joins another stream from the west, and the united stream empties itself into the Talung Chu. About  $4\frac{1}{2}$  miles, from the pass is an encamping ground, where we halted for the night. A mile to the west of this place is a large *gom-pa* called Talung Gom-pa or Jāng Talung, the residence of the well-known Lama of Tibet, named Ma Ring-bo-che, and of about 300 *Dabas*. Grass and fuel are abundant: the road is stony.

32. On the 20th, about 300 paces from the encamping ground, we crossed to the left bank of the Talung Chu, 3 feet deep and 35 paces wide, which flowing to the north-east joins the Kyi Chu. About 6 miles from our last halting place, is Phondu fort, having 50 houses to the south. It is situated at the confluence of the Rong and Migi rivers and the Talung. The first is a large river about 40 paces broad. It is formed by two tributaries, one coming from the Dam district, called the Dam river, and another from the Lāni pass, which meet about 3 miles from the fort. The second river, which is about  $3\frac{1}{2}$  feet deep and 65 paces wide, issues from the Ninchin-thang-la range, and after flowing through Shangshung district and then along a portion of the boundary of Reting it reaches the junction; these two with the Talung Chu form the well-known Kyi Chu. Near the fort and a little above the junction is an iron bridge 40 yards long similar to that at Chak-sam. During the rainy season boats are used for crossing the river\*: boiling point observations were taken near the fort (height 13,340 feet).  $6\frac{1}{2}$  miles further up we reached Chamchunang, a deserted village on the right bank of the Migi river, where observations for latitude and of the boiling point were taken (latitude  $30^{\circ} 16' 30''$ , height 13,230 feet). Grass and firewood are found here; the latter of the *padam* (a kind of fir) tree. The road is rugged and narrow up to Phondu fort, the remainder wide, smooth and level. The Talung district extends from the Cha pass to Phondu fort. The tract of land, which lies to the left of the Migi river to the south-east of the road and between the Phondu fort and Chamchunang, is called the Phondu district.

33. On the 21st, two miles further up we arrived at Chiomo Lhakang (50 houses) with a small temple of the same name: it is at the junction of a stream with the Migi river. On the right bank of the Migi, distant 5 miles and bearing  $72\frac{1}{2}^{\circ}$ , there is a large monastery called Reting Gom-pa where 200 *Dabas* reside: this was the last place on the route where I saw cultivation.  $4\frac{1}{2}$  miles further along the right bank of the stream a small *nāla* from the west falls into it; and  $2\frac{1}{2}$  miles further up another *nāla*, bearing  $302\frac{1}{2}^{\circ}$ , empties itself into the same: 3 miles further still is the Marnio pass, where boiling point observations were taken (height 14,960 feet). This pass has an easy ascent and a very gentle descent; it forms the northern boundary of the Reting district, which extends to Chiomo Lhakang southwards. About  $\frac{1}{2}$  a mile from the pass is Lāni Ta-sam, a halting place, where we passed the night. At this place there are some 50 tents occupied by members of the nomad tribe, which is under the control of a *Ta-sam Pa* (a head-man appointed by the Lhāsa Government to each *Ta-sam*) whose duty it is to have horses and yaks in attendance for the Lhāsa officials. These people receive no wages for their services, but are allotted tracts of land, on payment of some annual taxes, large enough to graze their cattle during the whole year, and they always keep them within the prescribed limits. They are held strictly responsible for all accidents and for the safe transit of all goods within their limits. Their tents are made of the long, coarse, black wool of yaks. At the time of our arrival there was a fall of snow about a foot deep, and fuel and fodder were difficult to obtain.

34. Leaving Lāni Ta-sam on the 22nd we reached the Lāni pass by an easy ascent of  $2\frac{1}{2}$  miles. Boiling point observations were taken at the pass, (height 15,750 feet). The Lāni range comes from the east, and far off in that direction are some high peaks covered with perpetual snow. A stream issues  $2\frac{1}{2}$  miles from the pass and after flowing to the north for about  $4\frac{1}{2}$  miles is joined by another stream from the west. A mile further is a Dam Chuchan (a hot spring of the Dam district), in which the inhabitants of the neighbourhood bathe at least twice a year. There are three square *kacha* tanks† 21 feet long and 2 feet deep which are always full of water; in these the bathers remain immersed up to their necks until the perspiration runs from their foreheads, when they leave the tank, and lie down wrapped up warmly

\* The boats are made of hides stretched on a wooden frame work; the hides most valued for this purpose are those of the wild yak, and next those of the domesticated yak.

† The temperature of these was roughly estimated at about  $120^{\circ}$ .

for some minutes; after this they drink some beer and take food. About  $1\frac{1}{2}$  miles from the spring is a halting place called Yar Khorchen, where there are three small *kacha* houses, two for the shelter of travellers and one for a *Khorchen* (a large *Khor* or *Khorlo*\*) in the Dam valley which lies north-east and south-west. The valley is about 15 miles long and 5 miles broad, and is watered by a small stream called the Dam river, about 2 feet deep and 20 paces broad, a tributary of the Rong river. Three miles to the west of the halting place is a *paka* house belonging to the *Chigeb* (ruler or *Lambardār*) of the Dam valley. There are some 200 tents of nomads, whose occupation is the grazing of cattle consisting of ponies, yaks, goats and sheep; some of them are traders, who bring *bul* (a kind of soda) and salt from the Tengri Nor lake and exchange them for corn and cloth at Lhāsa. In addition their own valley furnishes several other commodities for exchange; for instance, yaks, goats, sheep, ponies†, butter, &c. The nomads are Tibetans, very stout and warlike; they are not subject to the Lhāsa Government, but acknowledge the authority of the Ambān. The valley is noted for its pasturage. The head Lama has 300 mares stabled here under the charge of a *Chi Pon* (a master of the stable); they are milked every day during summer, and a kind of fermented liquor is prepared, after the Tibetan process of distillation, for the use of the head Lama; it is the only liquor which he is allowed to take. About two days' journey from the valley is the Nam or Tengri Nor lake, and some 10 days' journey to the north of the lake are wild people scattered over the hilly regions. We halted two days at Yar Khorchen, where observations for latitude and boiling point were taken (lat.  $30^{\circ} 30' 55''$ , height 14,460 feet).

35. Leaving the halting place on the 25th September 1879, and crossing four streams coming from the east, at 2, 4,  $5\frac{1}{2}$  and  $6\frac{1}{2}$  miles respectively, from Yar Khorchen, we reached the Chiokehe pass after a march of  $9\frac{1}{2}$  miles. The four streams flow to the S.W. and uniting form the Dam river. The pass has a gentle ascent and a similar descent on the other side. A mile before the pass is reached there are eight small, unprotected *Churtans*. The pass forms the northern boundary of the Dam district.  $4\frac{1}{2}$  miles further we crossed the Lhai Chu, 2 feet deep and 30 paces wide, coming from the north-west; it issues from the Nin-chin-thang-la range and flowing to the south-east falls into the Migi river. A road runs up the Lhai Chu and thence across the Nin-chin-thang-la pass to the Tengri Nor lake. At a distance of about 23 miles, bearing  $116\frac{1}{2}^{\circ}$ , is Potāmolam, one of the high peaks covered with perpetual snow. The road was good throughout this stage. We stopped for the night on the left bank of the Lhai Chu.

36. On the 26th we had a long march of 24 miles: at two miles from our halting place we crossed one of the principal sources of the Migi,  $2\frac{1}{2}$  feet deep and 50 paces wide, coming from the north. Further on we forded 5 streams coming from the east, 8, 9,  $12\frac{1}{2}$ ,  $16\frac{1}{2}$  and  $17\frac{1}{2}$  miles respectively from our last halting place. These streams join a river from the Shangshung pass, which flowing to the south is joined by the Lhai Chu. The road which was good lay through a valley between two spurs running to the south, which are connected by an easy low pass called Shangshung, distant 23 miles from the last station. About  $12\frac{1}{2}$  miles distant from the pass and bearing  $232^{\circ}$  is a high snowy peak, called Samden Khānsa. We camped for the night on a level piece of ground covered with grass about three-quarters of a mile beyond the pass: during the march we passed some nomad tents at intervals.

37. On the 27th we marched  $19\frac{1}{2}$  miles along a level and wide road, and reached the left bank of a stream coming from the south-east where we encamped: on this march, after  $7\frac{1}{2}$  miles we came to the Yu stream flowing from the east and joining another stream which issues from a square lake about a mile broad, and situated about 3 miles to the west of the road. The united stream flows northwards and is called the Nag Chu (Nag) river: the lake is said to be in a large, level valley about 32 miles long and 8 miles broad; about 4 miles from the right bank of the Yu stream is the Yu pass, with an easy ascent over a spur of the range to the east. Two snowy peaks are visible from it, one at a distance of about 37 miles, bearing  $304\frac{1}{2}^{\circ}$  and another about 40 miles bearing  $322\frac{1}{2}^{\circ}$ .

38. On the 28th, after marching  $5\frac{1}{2}$  miles up an easy ascent, we crossed the Khorchen pass over a spur from the range to the east. This pass forms the northern limit of the Shangshung district, which is said to contain 500 tents of nomad tribes.  $14\frac{1}{2}$  miles from the pass we crossed to the left bank of the Nag river,  $2\frac{1}{2}$  feet deep and 40 paces wide, and reached a Māne Khorchen (a house containing a large *Khor* or *Khorlo*) where we passed the night. From

\* A *Khorlo* is a revolving, drum-like cylinder, made of paper covered with red parchment, on which is written the sacred formula in large golden or red characters. The paper also has the same formula many times repeated printed on it (by engraved characters on wood). *Khorlos* are of various sizes: the smaller are covered with silver, copper or brass plates, and are constantly held in the hand. The paper is folded round a reed, through which passes an iron pin. A thong is fastened to the lower end of pin of large *Khorlos* and is used for revolving them. It is believed by the people that constantly keeping the *Khorlo* in motion purifies them from sin.

† The country is found too cold for asses, and hence neither asses nor mules are found in these parts, although in the immediate neighbourhood of Lhāsa they are both in abundance, some of the mules being very tall (about 14 hands) and valued at some 700 or 800 rupees.

this place a direct road branches to Sining-fu or Siling, a large city of the Chinese Empire situated about 60 miles to the east of the Koko Nor lake. We chose the circuitous road by Shiabden Gom-pa, where we hoped to replenish our stock of provisions which was running short.

39. On the 29th, about 5 miles beyond Māne Khorchen, we crossed a stream from the left, which two and a half miles further down falls into the Nāg Chu (Nag) river. This river is said to water the Hor district to the N.E. Three-quarters of a mile further is Shiabden Gom-pa in which dwell 100 *Dabas*; it is surrounded by some 150 houses and tents: there is a large house for the Jongpons.  $1\frac{1}{2}$  miles to the south is a group of hot springs within an area about half a mile in circumference. The thermometer gave a temperature of  $140^{\circ}$  for one of the springs. Shiabden Gom-pa is in the Nāg Chu Kha district. Grass is abundant. The district contains some 3,000 tents of nomads. Some of the tribes are much addicted to robbery which they commit far off to the west. The climate is cold. Observations for latitude and for height by boiling point were taken (lat.  $31^{\circ} 28' 27''$ , height 14,930 feet). Supplies are procurable. Tibetan silver coin is current in all these districts: there are no gold or copper coins. The silver coin is of two kinds; one known as *Chānja Paulung* is an old coin, it has no alloy in it and weighs a quarter of a *tola*: the later coins, distinguished by the names of the rulers who coined them, have alloy in them and weigh half a *tola*. Both kinds of coin have the same value which is equivalent to six annas of Indian money: they bear the common name of *Tanka*. For small change coins are cut up into pieces. The Indian rupee is also current. We spent three nights at Shiabden Gom-pa.

40. On the 2nd October we crossed a spur about 5 miles from the temple, and  $3\frac{1}{2}$  miles further reached the Thaigār La (pass) by an easy ascent. After passing the spur we recrossed the stream we had passed just before reaching Shiabden Gom-pa. Two miles north of the pass is a lake, named Mora, 2 miles long and  $1\frac{1}{2}$  broad, and around it were a number of nomad encampments. Eastwards of the lake, a road runs to Ta-chien-lu, a great tea mart. We camped for the night a short distance beyond the pass.

41. On the 3rd, after marching  $3\frac{1}{2}$  miles we reached the direct road from Māne Khorchen. Here we heard that a gang of mounted robbers from the Jāma district, about 300 in number, was returning by this road laden with booty obtained from the Tengri Nor district. It consisted of 100 hill ponies, 300 yaks and 5,000 goats and sheep. To escape an attack we diverged again towards the north-west, and after marching about 2 miles reached the place where the ponies belonging to the Mongolian caravan, with which I was travelling, had been left behind for pasturage when going down to Lhāsa, and we waited there till the gang passed. At 4 P.M. we started and proceeding north-east for about  $2\frac{1}{2}$  miles again struck the direct road, and  $2\frac{1}{2}$  miles further halted at the base of a mountain. About 40 miles distant and bearing  $98\frac{1}{2}^{\circ}$  is Sutodampārabge, a snowy peak.

42. On the 4th, about 5 miles from the last halting place we crossed a stream  $1\frac{1}{2}$  feet deep and 12 paces wide flowing down from the north-west, and  $5\frac{1}{2}$  miles further we reached the Ta-tsang pass by an easy ascent: the range runs at a bearing of  $117\frac{1}{2}^{\circ}$ . This pass is on the boundary between the districts of Nāg Chu Kha and Jāma: the latter is said to contain 1,500 tents. The district is governed by two Ambāns who reside at Sining-fu. Having descended  $1\frac{1}{2}$  miles from the pass we reached a stream flowing to the north, and proceeding along its bank for 8 miles crossed another stream,  $1\frac{1}{2}$  feet deep and 12 paces wide, falling into it from the west. Half a mile further we reached Khamlung encamping ground where there were about 50 tents, and here we remained for the night. Latitude and boiling point observations were taken here (lat.  $31^{\circ} 57' 44''$ , height 15,050 feet).

43. On the 5th, after an easy ascent of a mile, we crossed the Khamlung range, bearing  $122\frac{1}{2}^{\circ}$  for a short distance from the pass so called and then turning to the north-east. To the north of the range lies the Ata district, containing 500 tents. A stream flows from the range to the north and about  $6\frac{1}{2}$  miles from the pass is joined by another stream from the west  $1\frac{1}{2}$  feet deep and 15 paces wide. The united stream after flowing  $2\frac{1}{2}$  miles along the road turns to the east. To the left of the pass and  $4\frac{1}{2}$  miles distant is an encamping ground where we saw about 60 tents; and about 5 miles further is a small lake to the west of the road.  $3\frac{1}{2}$  miles from the lake is the boundary between the Ata and Yāgra districts. Half a mile beyond the boundary a road branches off to the north-east to Siling *viā* Di Chu Rab Dun and Jun. This road, though direct, is not safe, owing to its being much infested by robbers; we therefore kept to the same northern route which is seldom used by travellers. 2 miles to the east is a lake about 8 miles in circumference. At the distance of  $2\frac{1}{2}$  miles from the boundary and on the left bank of the Saung Chu stream,  $1\frac{1}{2}$  feet deep and 25 paces wide, coming from the north-west, is an encamping ground called Giaro, in the Yāgra district. Here we remained for the night and I took boiling point observations (height 14,540 feet).

44. On the 6th, after travelling about 8 miles, we arrived at the bank of the Yāgra Chu (Tang) river, which issues from the Tangla range and flowing to the south falls into the Saung Chu stream. The road from the Dam district to this place is good and wide, but further up it is rugged and stony, and passes through a narrow valley between two long spurs of the Tangla range.  $9\frac{1}{2}$  miles from the bank of the stream another small stream from the north-west joins the Yāgra Chu.  $3\frac{1}{2}$  miles further we reached Yagratoth encamping ground where there were some 80 tents occupied by nomads. We stopped for a night at Yagratoth; and I took boiling point observations (height 14,950 feet).

45. On the 7th October 1879, crossing the Yāgra Chu to the left bank and having proceeded about 3,800 paces, we saw three snowy peaks to the left at distances of 4,  $4\frac{1}{2}$  and 6 miles, bearing  $312^\circ$ ,  $329\frac{1}{4}^\circ$  and  $339^\circ$  respectively, and one to the right at a distance of 8 miles, bearing  $72\frac{3}{4}^\circ$ : three miles further we re-crossed the same stream. About  $1\frac{1}{2}$  miles further on, a stream from the east joins the Yāgra Chu, and  $1\frac{1}{2}$  miles thence another stream from the north-west falls into it. 2 miles beyond we passed a snowy peak close to our right and  $4\frac{1}{2}$  miles further reached the junction of a stream from the north-east with the one along which we were travelling. Two snowy peaks were visible from this place at distances of 10 and 16 miles and bearing  $62\frac{1}{4}^\circ$  and  $50\frac{1}{4}^\circ$  respectively. Having crossed the main stream and proceeded  $\frac{1}{2}$  a mile further we came to a stream from the north-west which falls into the former and 2 miles beyond we arrived at an encamping ground where we halted. Snow fell during the night.

46. On the 8th, half a mile from our halting place, we crossed a small stream from the north-west which joins the Yāgra Chu. About 8 miles further on two peaks were visible, one distant 4 miles and bearing  $326\frac{3}{4}^\circ$  and the other 23 miles and bearing  $41\frac{1}{2}^\circ$ . A mile further is the Tang pass: it was covered with two feet of snow, which fell during the preceding night. Tangla is a long range of mountains running from the west and possessing several snowy peaks and spurs. It is the northern boundary of the Yāgra district which contains 1,000 tents. About 100 miles to the west of the pass is the Amdo district which is sparsely inhabited by nomads; beyond it to the north and west the only inhabitants are a rude and ignorant race: they clothe themselves in skins of animals and dwell in small tents also made of skins. Some of them possess guns\*, (obtained from Tibetans by bartering hides) which are used for killing wild animals whose flesh they roast and eat. They decline to eat vegetable food, even when offered them, as they say it makes them ill. The inhabitants of the country between the Dam and Yāgra districts chiefly live on meat and *sattu* (flour of parched grain). No tree grows in these districts. Dry dung of both the wild and domesticated yaks is used for fuel. Grass is abundant. The country to the north of the pass is uninhabited even by nomads. Boiling point observations were taken at the pass (height 16,380 feet).  $1\frac{1}{2}$  miles of an easy descent from the pass brought us to a stream which rises in the Tangla range and flowing for  $6\frac{1}{2}$  miles along the route, joins the Lurab river which is 2 feet deep and 35 paces wide and comes from the west. The united stream after flowing about 14 miles along the right of our road, turns to the east. From the left bank of the river the track runs through an open country. Grass and fuel (dry dung of wild yaks) is found in abundance all along the route. Proceeding for  $3\frac{1}{2}$  miles, by a wide, level road along the left bank of the river, we reached Kentinsiring, a halting place, from whence two high snowy peaks are visible, one bearing  $274^\circ$  and distant  $14\frac{1}{2}$  miles and another bearing  $276\frac{1}{2}^\circ$  and distant  $12\frac{1}{2}$  miles. Wild animals are numerous here; for instance, *dong* (the wild yak), *cho* (a deer), *goa* (a species of antelope resembling the chamois), *na* (a wild goat), *nhen* (a wild rocky mountain sheep), *chiānku* (a wolf), *hāze* (a kind of fox), *yi* (a wild cat), *kiāng* (a wild ass), *chipi* † (a marmot), *rigong* (a rabbit), *ābra* (a rat without a tail), *demo* (the brown bear): of this last, one species called *mide* has feet resembling those of a man, and is very savage; it often walks erect and attacks any human being it sees. During the night three feet of snow fell. We had much reason to fear robbers and we therefore formed ourselves into groups, each consisting of 10 men, to guard the caravan at night.

47. On the 9th, we left the halting place and proceeding 6 miles we met five mounted robbers. On being questioned they said that they were residents of the Yāgra district. They followed us for two marches intending to carry off our beasts of burden, but were unsuccessful, as we gave them no opportunity. About 15 miles from the last halting place we saw a lake about 7 miles in circumference, nearly 2 miles to the right.  $5\frac{1}{2}$  miles further we crossed a pass by an easy ascent, and descending thence at an easy gradient for  $2\frac{1}{2}$  miles, we reached Yakin-hapohiga, a halting place, where we rested for the night. A stream  $1\frac{1}{2}$  feet deep and 12 paces wide bearing  $300^\circ$ , emanating from the pass, crossed our route from the left. It flowed along our next day's road some 12 miles, re-crossing it in two places, and then turned to the north-east.

\* They can manufacture their own ammunition.

† During winter it does not come out of its den and is believed by the Tibetans to sleep. It yields a large quantity of fat which is used as an ointment for gout, &c.

48. On the 10th October 1879, 14½ miles from our last halting place, we saw two snowy peaks, bearing 300¼° and 297½° and distant 11½ and 12 miles respectively. There are two more high snowy peaks to the right, bearing 36½° and 35½°, distant 24 miles each. 3½ miles further up a stream, bearing 212½°, crossed the road and flowing to the right for 4 miles joined the stream from the south. 7 miles onward there is a halting place called Atag-hapchiga (height 15,080 feet) where we passed the night.

49. On the 11th, after marching 4½ miles, we crossed a small stream from the west. 2½ miles further we crossed a pass with a slight ascent. 17 miles beyond the pass there is an encamping ground, called Maurusen Khua (the bank of the Maurus)—the river is otherwise named the Di Chu or Thoktho—close to a small fresh-water lake. We halted here a night. There was no trace of a road beyond Atag-hapchiga; and we were guided by some Mongolians in our caravan who recognised the route by the aid of certain hill peaks. Observations for latitude and of the boiling point were taken here (latitude 33° 48' 25", height 14,230 feet).

50. On the 12th, having gone about 2½ miles, we saw two snowy peaks near each other, bearing 323½°, and about 16 miles distant: 2½ miles further, we arrived at the right bank of the Maurus river. It is supposed to issue from the Tengri Nor lake and to water Chinese territory. It flows here in 7 channels each about 40 paces wide, the entire breadth of the river including the islands being 800 paces: the greatest depth was 3 feet. The banks of the channels are boggy. One of the horses sank up to its belly but we succeeded in extricating it.

51. A stream running from the north-west joins the Maurus 2 miles to the south-west of the route. Small bushes\*, called by the Tibetans *Turæ*, about a foot high, were found growing along the banks of the river. The river here forms the boundary between the Chinese and the Tibetan dominions. Boiling point observations were taken on the left bank of the river (height 14,660). 4½ miles further is a pass having a slight ascent. 5 miles beyond the pass we observed a snowy peak distant 37 miles and bearing 110°. About 13 miles from the pass is a halting place, called Bukhmangne, a little below the top of another pass of little height. From the left bank of the river to Bukhmangne we had no fresh water; wherever water was found it was brackish, and a small stream which crossed the road had also the same taste. We stopped at the pass for the night. The general character of the pass and the neighbouring plains, is that they are bare of trees, although covered with grass and verdure. Dry dung of the wild yak is used for fuel.

52. On 13th, after proceeding 10 miles we crossed a large river called Ulangmiris, Namchuthai Ulangmiris or Chu Mar†, which flowing to the east, joins the Maurus river, and the united stream meets the Ma Chu at the Di Chu Rab Dun ferry. It here separates into 10 small channels averaging about 35 paces in width. The entire bed including the islands is 1,200 paces broad and the river was nowhere more than 3½ feet deep. Boiling point observations were taken on the left bank of the river (height 14,640 feet). 5 miles from that place is Kagchinar encamping ground. Here we found several pools of fresh sweet water. Our road to-day which was good lay along a wide plain between two ranges of mountains distant some 10 miles on either side.

53. On the 14th, 10½ miles from the encamping ground we came to a *Cha Chu* (salt water stream) from the north-west and flowing to the south-east. 5½ miles further up, we crossed another *Cha Chu* 1 foot deep and 20 paces wide flowing from the left, which issues from the Dungbura range. From hence a snowy peak is visible at a distance of 17 miles, bearing 126½°. Re-crossing the same stream 4½ miles further on, we reached Dungbura‡ Chadamo§, an encamping ground. A foot of snow fell here. The road was good as in the last stage.

54. On the 15th October 1879, 5½ miles from the encamping ground, we crossed a stream from the north coming from the Dungbura range which joins the *Cha Chu*. The joint stream below the encamping ground was brackish, but from that place up stream it tasted fresh. 6½ miles further we observed a high peak of the Dungbura range, distant 5 miles, bearing 230½°. 1½ miles further still is the Dungbura Khuthul (pass) which has an easy ascent. The general direction of the long range bearing this name is from east to west. 1½ miles from the pass, a stream emanating from the range flowed along our route. 7 miles from the pass is an encamping ground called Dungbura Nadamo, where we stopped for two nights on account of a fall of snow. Some traces of a road were visible to-day but it was stony and narrow.

\* These bushes are thorny and bear a small yellowish round fruit. This has an acid taste and is made into a kind of pickle.

† Ulangmiris, Chu Mar and Ma Chu all have the same signification, viz., *red river*. There is another river bearing these names, see para 59.

‡ *Dung* means a shell and *bura* blowing. This place is so called as it is said that when one of the Grand Lamas went to see the Emperor of China the gods came down to welcome him here and blew the shell.

§ *Chadamo* in the Mongolian means 'this side', *Nadamo*, 'the other side'.

55. On the 17th, having marched  $\frac{1}{2}$  a mile we came to a stream from the north which falls into that issuing from the Dungbura range.  $4\frac{1}{2}$  miles further, we crossed to the left bank of the stream which was  $1\frac{1}{2}$  feet deep and 30 paces wide.  $\frac{1}{2}$  a mile further, a stream from the south joins the latter. After proceeding 5 miles we found the stream which flowed along our route took a bearing of  $82\frac{1}{2}^{\circ}$ .  $4\frac{1}{2}$  miles beyond a brackish stream crossed our road towards the east. 4 miles further still, we came to several pools of fresh water. We stopped here for the night. Our day's march was almost entirely over snow.

56. Next day we struck eastwards for 3 miles to regain the right route which we had missed after passing the brackish stream, owing to its being hidden beneath snow. After three-fourths of a mile we crossed a low easy pass and some 8 miles beyond forded a stream coming from the north. 10 miles further, we arrived at the base of the Koko-shili range, and halted for the night on the bank of a stream coming from the north.

57. On the 19th, following up the stream for 5 miles, we crossed the Koko-shili Khuthul (pass) which has an easy ascent. 11 miles from the pass we reached the Koko-shili encamping ground on the right bank of a stream,  $1\frac{1}{2}$  feet deep and 15 paces wide, along which the route lay for the last 6 miles. The general direction of the range is from east to west. Observations for latitude and of the boiling point were taken here (lat.  $35^{\circ} 10' 37''$ , height 13,430 feet). Snow fell and we were obliged to remain here for two nights. Our beasts of burden suffered badly from the snow, and were unfit to proceed with the caravan in the morning. As there was no fear of being molested by robbers we were left behind to follow when we could. Of three ponies which had fallen ill one died, but the other two recovered.

58. On the 21st, after proceeding about 7 miles, the stream along which we were marching turned to a bearing of  $82\frac{1}{2}^{\circ}$ .  $1\frac{1}{2}$  miles further we crossed a low pass and descending gradually for  $1\frac{1}{2}$  miles, we reached a small half-frozen lake of fresh water. We easily tracked the caravan by the marks of the horses' hoofs on the snow. We passed the night on the shore of the lake.

59. On the 22nd, after travelling for about  $2\frac{1}{2}$  miles, we came to a small lake, where we met with a Mongolian caravan going to Lhāsa. It was composed of 150 souls (men and women), 80 camels and 100 ponies. When asked if they had seen our caravan, they at first answered in the negative, but afterwards acknowledged having observed, far off along the opposite bank of the Ma Chu river, a long line of what they supposed to be wild animals but which they now agreed must have been the caravan. Caravans as a rule, are very considerate towards each other: they never fail to aid any person or persons whom they find separated from or deserted by their caravan. They treated us very kindly and unsolicited offered us a large quantity of provisions of which we took only five seers of *sattu*. At noon we reached the right bank of the Ma Chu or Chu Mar river, which is about  $4\frac{1}{2}$  miles from the lake. We searched up and down along the bank for a ferry; but unfortunately we found none and were obliged to cut a way for ourselves, about a foot broad, through the ice from one bank to the other. We did this, because the half frozen river was not hard enough to bear either baggage animal or man, and the bed being boggy it was necessary that the crossing should be rendered as easy as possible. We however lost a pony and a mule which stuck in the bog and which we could not extricate. My attendant Chambel lost his toe while crossing the river, and this gave him great pain and made our future progress very slow. Night came on by the time we had crossed: in the darkness we could find no fuel and were forced to go to sleep without any food. To recruit ourselves we halted on the following day. Boiling point observations were taken on both banks: (right bank height 14,040 feet; left bank height 14,050 feet). The entire breadth of the river is about 700 paces, it is 2 feet deep and is here divided into 5 channels: it is said to flow into the Chinese Empire. Three snowy peaks are visible from the right bank of the river at distances of 36,  $38\frac{1}{2}$  and 32 miles and bearing  $311\frac{1}{2}^{\circ}$ ,  $318\frac{1}{2}^{\circ}$  and  $356^{\circ}$  respectively.

60. On the 24th October 1879, after marching a mile we crossed the Angirtakchia stream, 2 feet deep and 15 paces wide, which issues from the range of that name, and flowing to the right joins the Ma Chu river.  $10\frac{1}{2}$  miles from the stream is Mugzisolma, a halting place, on the bank of a stream which flowing from the north here changes its course towards the east. Here we found tracks of our caravan, and rested for the night. We had only dry horse-dung for fuel which is inferior to yak-dung.

61. On the 25th,  $6\frac{1}{2}$  miles from our last halting place, we again crossed the Angirtakchia stream, and following up its right bank for  $3\frac{1}{2}$  miles, we arrived at the place where a stream from the north joins it.  $3\frac{1}{2}$  miles further we reached the Angirtakchia encamping ground. Observations for latitude and the boiling point were taken here (lat.  $35^{\circ} 33' 35''$ , height 13,690 feet). From the Dam district to this place grass and dry yak-dung were abundant; wild animals were numerous. The route generally speaking was good.



62. On the 26th, a mile from our encamping ground we came to a stream from a bearing of  $32\frac{1}{2}^{\circ}$  which joins the Angirtakchia stream.  $2\frac{1}{2}$  miles further on, another stream from the west joins it. After proceeding for 4 miles, we ascertained that the stream had its source about 2 miles to the west. A steep ascent of  $1\frac{1}{2}$  miles then brought us to the Angirtakchia Khuthul (pass). The Angirtakchia\*, a long range, lies east and west. It is probably the same range as is called Kuen Lun and here and there had peaks covered with snow. At a distance of 12 miles from the pass, and bearing  $88^{\circ}$ , is a high snowy peak of the range. A stiff descent of  $1\frac{1}{2}$  miles brought us to a stream along which the route lay for 4 miles, when the stream turned off at a bearing of  $82\frac{1}{2}^{\circ}$ . We halted near this turn. Snow fell this afternoon. Scarcity of grass, on account of snow, caused the death of two of our animals. This day we had a rugged, stony and narrow road with several ascents and descents.

63. On the 27th, after proceeding  $1\frac{1}{2}$  miles we crossed a stream from the west, which flowing to the east joins the stream from the south. Further on, by a steep ascent of a mile, we reached the Naichi Khuthul (pass). Naichi is a small range which shoots off from the long range of Angirtakchia. From thence we had an easy descent of 8 miles to the base of the pass, where nomads (Mongolians) encamp for a portion of the year to pasture their flocks and herds. This place, called Amthun, is at the junction of the Naichi Gol (river) from the west and a stream from the Naichi Khuthul (pass). We met with great difficulties to-day during the course of our journey. Our beasts of burden had decreased in number and a portion of the baggage was left at the last stage for which the poor beasts had to trudge back. With much trouble we reached the pass. There we were obliged to leave half of the baggage under care of two men and to remove the other half. Having arrived at Amthun we returned to the pass to bring down our baggage, and fortunately found the same Mongolian caravan which we had met on its way to Lhāsa. It appeared that the caravan had returned from the Koko-shili encamping ground, as it could not proceed to Lhāsa on account of snow. We stopped at Amthun for a night. This is the first stage where we found firewood (obtained from a thorny tree about six feet high). Here grass was abundant. From Lhāsa up to this place our direction had in general been northerly, but henceforward we proceeded eastward.

64. On the 28th, after proceeding  $6\frac{1}{2}$  miles we reached Naichi, a nomad camp of 10 tents. From Yāgra to Naichi the country is quite uninhabited. Mongolian tents are made in a curious manner. When a tent is pitched it bears a resemblance to a dome, round at base. The wooden framework, which when set up presents a lattice-like appearance, is, for the sake of convenience in packing and carriage, divided into five, seven, or nine pieces, according to the size of the tent. Each piece when it is rolled up looks like a bundle of sticks. The top piece has an opening for the smoke to pass out. The frame is covered with a kind of coarse woollen cloth, called *Chhingba* or *Phingba* bound round with a long rope which keeps it tight. They do not divide the tent into compartments. It has only one opening for ingress and egress which is closed by a kind of rough door made of planks fastened together by wooden pins. They cook inside. All males, females and children live together. A tent about 12 yards in circumference can be made for Rs. 12.

65. The general direction of the Naichi valley, which is a sub-division of the Taichinar district, is from west to east. The level portion is about 50 miles long and with an average breadth of 3 miles. It is bounded on every side by low mountains, on which no snow was visible, and even when it does fall it quickly melts away. The valley is intersected lengthways by the Naichi Gol (river), which receives only a few tributaries from the mountains, but is mostly fed by numerous springs of fresh water along its banks. The ground is generally smooth being only furrowed here and there by the beds of dry mountain torrents. The valley is covered with rich pasturage which affords sustenance to large herds of ponies, sheep (with thick tails), camels (Bactrian) and goats. At the eastern end of the valley the river widens to thrice its previous breadth. This valley is occupied by nomads who dwell in tents, 10 in number, each containing about six souls. They shift their camp from place to place along the whole valley for convenience of pasturage. Their diet chiefly consists of milk and boiled flesh. Grain forms only an inconsiderable portion of their food and is imported from the Korluk district about 100 miles to the N. These people, like the rest of the Mongolians, are hospitable. They milk their mares; this when rendered acid by the addition of sour milk is called *cheka* and a kind of spirit distilled from it is called *arki*. The Mongolians are well-built and stout but timid. Their marriage customs are very simple. A man courts his intended bride for two years after which the parents of the pair construct a new tent for them, and provide a feast for their community. After feasting and dancing the marriage ceremony is considered to be completed. Yaks are rare here. We stopped at Naichi for five days. We here overtook our own caravan, but it started before we were ready to accompany it. The Mongolian caravan intended to remain

\* This range is so called on account of a grass which grows in abundance here, which is used in medicine and is also burnt as an incense before idols.



here till the snow cleared off. Observations for latitude and of the boiling point were taken at camp (lat.  $35^{\circ} 52' 20''$ , height 12,010 feet).

66. We here replenished our stock of provisions, purchased more beasts of burden, and on the 3rd November 1879 resumed our journey. Proceeding  $8\frac{1}{2}$  miles down the stream we stopped for the night. At distances of 4 and 6 miles, and bearing  $334^{\circ}$  and  $31\frac{1}{2}^{\circ}$  respectively were two peaks to the left of our halting place.

67. On the 4th, after marching for 7 miles, we crossed to the left bank of the Naichi Gol (river), which is 40 paces wide and 2 feet deep and has a rapid current. Here, a dry bed of a stream from the south joins it.  $2\frac{1}{2}$  miles further on we reached Thāglagn, an encamping place of the nomads within a wide level plain, where we halted for the night. These encamping places are distinguished by circular raised platforms over which the tents are pitched and on which fires are lighted in iron grates. Fuel and grass were abundant.

68. Next day, marching along the left bank of the river, we crossed a dry bed of a stream, a mile distant from the last halting place, which issuing from the northern mountains joins the river.  $7\frac{1}{2}$  miles further on, a stream from the south joins it. To the right is a peak at a distance of  $5\frac{1}{2}$  miles and bearing  $164^{\circ}$ .  $1\frac{1}{2}$  miles onward a dry bed of a stream from the north joins the river. We stopped here for the night. Grass and fuel were abundant.

69. On the 6th, marching  $9\frac{1}{2}$  miles along the left bank of the river, we reached Shīarthoge, an encamping place. Here, two streams—one (dry) from the north and the other from the south—join the river. Boiling point observations were taken (height 10,370 feet). Grass and fuel were abundant.

70. On the 7th, we followed the river for  $1\frac{1}{2}$  miles, when it turned to a bearing of  $114\frac{1}{2}^{\circ}$ , for a distance of 3 miles to wind round a spur after which it flows to the north-east. A stream from the south (probably the same stream which issued from the Angirtakchia range and flowing for 4 miles turned to a bearing of  $82\frac{1}{2}^{\circ}$ ) joins the river opposite to the foot of the spur.  $2\frac{1}{2}$  miles from the last nomad encamping place is a pass, called Khokhotham, over this low spur but which has a steep ascent.  $2\frac{1}{2}$  miles further on, we arrived again at the left bank of the river. A quarter of a mile onward we crossed it and reached Saikhanthoge, a nomad encamping place. The river is 70 paces wide and  $3\frac{1}{2}$  feet deep; its current was rapid and it was very difficult to ford. This is the last encamping place of the nomads of the valley. We stopped here for the night as there was no grass for our beasts at a convenient distance onward. From Saikhanthoge we again turned to the north.

71. On the 8th November 1879, our route, which now lay at a distance from the river, after  $2\frac{1}{2}$  miles crossed a stream from the east, which flowing to our left for  $1\frac{1}{2}$  miles joined the Naichi Gol (river).  $16\frac{1}{2}$  miles further, we reached Gile, an encamping ground, where we halted, having passed *en route* three dry beds of streams at distances of  $5\frac{1}{2}$ ,  $12\frac{1}{2}$  and 15 miles respectively from the right bank of the stream. Firewood was found but no grass.

72. On the 9th, after marching for  $4\frac{1}{2}$  miles along the right bank of the river, we reached a place half a mile to the east of the junction of two dry beds of streams with the river, one coming from the east and the other from the west. Up to the junction our route lay through a valley, but further on it passed over an open sandy plain. The river from Saikhanthoge, up to the junction, flows in a deep channel, and as the lateral valleys are almost all dry there is no grass along this portion of the route. A plant about 3 feet in height, and on the leaves of which the poor beasts had to satisfy themselves, only grows here and there. Proceeding 5 miles from the junction we crossed a dry bed of a stream coming from the east, which joins the river half a mile to the west.  $3\frac{1}{2}$  miles further on, we observed the top of a spur bearing  $225^{\circ}$  and distant 7 miles. Of the two chains of mountains between which our route lay as far as the junction, one from thence turns to the west and to the north of which a large tract of desert lies, and the other runs to the east. 4 miles onward we camped for the night on the right bank of the Naichi Gol (river). Our beasts fared worse than in the last stage because even the plant, the leaves of which had supplied fodder, now failed.

73. On the 10th, after travelling  $6\frac{1}{2}$  miles we entered a tract where grass and fuel were abundant. 5 miles from thence is a nomad camp, called Golmo, situated in a densely wooded forest, 6 miles broad and about 100 miles long. The forest trees, named by Mongolians *humlu*, *harma* and *chhak*, are about 6 or 7 feet high. The second bears a kind of black or red fruit, in flavour like the raisin, which is gathered in November for future use and for merchandise. Tall grass occupied nearly the whole forest. Some 50 tents are scattered here and there. Nomads, generally speaking, are very stout, and their lips have a yellowish color. Their wealth consists in live-stock, such as sheep (the species which has a thick tail), goats, camels (Bactrian), ponies and Mongolian kine. The last are like the hill cows of India; but are covered with somewhat

longer hair in general of a greyish color. The principal articles of diet are boiled flesh, milk, butter and *sattu*, the last is brought from Korluk. Brick tea is in general use in Mongolia. The climate is mild and very salubrious. During the rainy season the soil is moist, and a kind of white saline incrustation is said to spread over the trunks of trees from which after a time they die. In that season insects, such as gnats, &c., are very troublesome. From the point where we entered this grassy tract our route changed to an easterly direction. The Naichi Gol (river) flowing to the north for 40 miles through a desert is said to empty itself into a lake, called Hāra Nor (Daolatsan lake), which is about 60 miles in circumference and has no outlet. The water of the lake is brackish. About 100 miles to the north-west is Hazir, the residence of the *Jhāsa* (chief) of the Taichinar district. Hazir contains 500 tents, and some of the residents are said to be very wealthy, having as many as 500 ponies and 5,000 goats and sheep. Nomads of the Taichinar district are met with up to about 150 miles to the west of Golmo; but from thence is a dreary uninhabited plain which extends 150 miles. The *Tānthus* (men with white turbans), probably the inhabitants of the east of Khotan, are said to live on the other side of the plain. They sometimes cross it in their hunting excursions and take shelter in the tents of the nomads. Some six years ago seven mounted *Tānthus* are said to have taken shelter in the tents. After some days, when they had obtained full information respecting the moveable property, they, one night, butchered the occupants and absconded with their property. Since then the Mongolian nomads have ceased to live on the border of the uninhabited plain. Mongolian women, generally speaking, wear no ornaments. Their dress is a kind of long, loose garment which hangs to the ankles. The clothes of men and women are made of woollen cloths and skins of the wild animals. Women generally occupy themselves in making clothes for their husbands and children. The men trade with Lhāsa and China. Their manner of salutation is peculiar. They repeat the words *Amur Bhaino* (safe and sound) and stretch out their open hands when they salute an equal or a stranger. When they salute a man of rank or a king they first put their right hand on their foreheads and then repeat *Amur Bhaino* and stretch their hands as before. We found the nomads very hospitable. No sooner does a caravan approach than they immediately crowd around it and civilly ask the following questions "Is your health good?" and "Is your journey safe?" Further, they invite the members of the caravan to lodge with them. They present their guests with tea, butter, milk, meat and a kind of fresh cake fried in oil which is brought all the way from China. We stopped at Golmo for 10 days. Observations for latitude and of the boiling point were taken (lat.  $36^{\circ} 25' 18''$ , height 8,790 feet). A glass of my sextant had become loose and caused me much anxiety.

74. On the 21st November 1879, we left the nomad camp and proceeding for  $7\frac{1}{2}$  miles crossed a small stream from the south. We observed two peaks to the right of the route at distances of  $15\frac{1}{2}$  miles each, bearing  $202\frac{1}{2}^{\circ}$  and  $162^{\circ}$ . 5 miles further we reached Hurthothāle, a nomad camp of 20 tents. Here we visited a ruined enclosure of mud walls of ancient date. It is said that it was erected by nomads as a safeguard against the incursions of the marauders from the east. We passed a night here. Our route had lain through the heavy jungle before mentioned. Grass and fuel were abundant.

75. On the 22nd, after marching  $6\frac{1}{2}$  miles, we reached a place, whence a peak was observed, bearing  $162\frac{1}{2}^{\circ}$  and distant  $17\frac{1}{2}$  miles.  $5\frac{1}{2}$  miles further is a stream coming from the south which flowing for some miles to the north loses itself in the desert. On the banks of the stream lies a nomad camp of 50 tents, called Thugthe. From Thugthe a route branches off northward to Sondshu (Chonju).  $4\frac{1}{2}$  miles further we arrived at Thāgthe, a nomad camp of 50 tents. Water is obtained from wells as there is no spring or stream within several miles of the camp: in these wells the water is found very near the surface of the ground. We were detained here for two days, as two of our ponies had gone astray.

76. Leaving this camp on the 25th, we reached Dāla, a nomad camp of 4 tents  $4\frac{1}{2}$  miles distant, where there is a spring of fresh water. After travelling 10 miles further we arrived at Chūgu, a nomad camp on the bank of a stream which flowing to the north loses itself in the desert. A spring of fresh water was found on the route about  $11\frac{1}{2}$  miles from our last halting place. We stopped at Chūgu for the night.

77. Next day having marched 12 miles we reached Dhānāhotho, a nomad camp of 2 tents. We saw no springs of water along this portion of the route; but from nomad encampments visible here and there at a distance from the road, I conclude there must have been water in the vicinity.

78. On the 27th,  $4\frac{1}{2}$  miles from our last camp, we crossed a stream from the south. Further on, we noticed *en route* several springs of fresh water.  $6\frac{1}{2}$  miles from the stream we crossed a low sand ridge running S.W. and N.E. and terminating in the latter direction about a mile from the route.  $5\frac{1}{2}$  miles from thence is a brackish stream which flows to the north-east. Salt is found incrustated on the banks of the stream. This kind of salt is in general use in the

country; I heard of no rock or mineral salt being found anywhere.  $3\frac{1}{2}$  miles further we arrived at Tengelik, near the junction of a stream coming from the south-east with the Bai Gol (river), where there were 100 tents and 10 *kacha* houses. There are a few fields: one crop of barley is raised annually. Observations for latitude and of the boiling point were taken here (lat.  $36^{\circ} 24' 25''$ , height 7,720 feet). The Bai Gol (river) running from the east after watering the Tengelik plain flows to the north, where it is lost in the desert. We here overtook our old caravan which had left us at Naichi. Those members of the caravan who were Mongolians and residents of adjacent places took leave of us and went to their homes: only the Tibetans who were to accompany us remained. We decided to stop here for a few days in order to rest our animals and to replenish the stock of *sattu* which had run short. We did not observe any water-mills in Mongolia; but noticed small hand-mills, made of light red sand-stone brought from Hoiduthara in the Korluk district. Two days after our arrival, some of our *Kifla* friends and ourselves went out shooting, as we had heard that the wild animals in the mountains to the south, distant half a day's journey, were unequalled in fatness and flavour, and that their skins were valuable. We hunted here for four days and succeeded in shooting some animals (wild yaks and wild asses). On the fifth day we returned from our trip and intended to start next morning the 5th December. Unfortunately just as we were preparing to depart we were attacked by a band of some 200 mounted robbers of the Chiämo-Golok tribe, who had come to rob the residents of Tengelik, and finding us encamped there fell upon us also. Seeing no means of escape we had recourse to arms. We were quite unprepared; but we hastily equipped ourselves and with the assistance of some of the residents resolved to make a defence. At first a desultory firing from a distance commenced from both sides; but the robbers soon left off firing and rushed on us with swords and spears. One of them was shot dead; but as they pressed on and we did not find ourselves strong enough to encounter them in a hand to hand fight, we gave way and ran with our arms and instruments. They fell upon our property and took whatever they found worth having, and departed. They succeeded in carrying away 300 ponies belonging to our caravan and the residents. We were robbed of most of our property as in what was left behind in the confusion and hurry we found only two of our loads containing petty articles of merchandize. After the robbers had departed the nomads from the adjoining encampments having collected together for pursuit, we joined them and followed in the track of the robbers till the evening: and although we did not succeed in coming up with them we returned next day with whatever they could not carry in their flight and had left on the road. This consisted of 50 ponies, mostly lame or otherwise unfit to keep up with them, and some property which they found too heavy or unprofitable. The caravan now dispersed. The Mongolians had as before stated already taken their departure, and of the Tibetans some seeing themselves unable to continue their journey returned to Naichi to join the caravan going to Lhāsa, and some remained at Tengelik waiting for some other opportunity to return. We were obliged to discharge our Tibetan servants as their services were no longer required. The general direction of our route from Golmo to Tengelik was from west to east. At the latter place we observed a peak, bearing  $167^{\circ}$  and distant 12 miles.

79. Having hired three bullocks on which to load what remained of our property, we left Tengelik for Korluk on the 13th December 1879. Some of our Tengelik friends accompanied us to barter flesh, leather cords, and butter for grain. Retracing our steps for about a mile to gain the right road we proceeded for 6 miles and stopped at Harori, a nomad camp of 2 tents. We halted here the next day also on account of the owner of the bullocks not having arrived as promised.

80. On the 15th December, proceeding for a mile along the left bank of the Bai Gol (river), we crossed to the right bank at a place where it was 4 feet deep and 20 paces wide. Half a mile from the right bank and to the north-west, we saw a *kacha* walled enclosure, built by Mongolian nomads to store their surplus property.  $3\frac{1}{2}$  miles from the last stage we observed 4 peaks, bearing  $116^{\circ}$ ,  $143^{\circ}$ ,  $338^{\circ}$  and  $348^{\circ}$ , and distant 41,  $31\frac{1}{2}$ , 49 and 41 miles respectively. The horizon towards the north was generally hazy and the range had been at such a distance from the route as to allow of no observations to peaks on it. 13 miles further on, we reached Dabasutha, a nomad camp of 4 tents, where we stopped for the night. To-day's route was level and sandy.

81. On the 16th, having gone a mile we crossed a stream from the south. Proceeding about 7 miles further we reached Hara-husun, an encamping ground on the right bank of a branch of the Bai Gol (river), 2 feet deep and 10 paces wide, which flowing north-west loses itself in the desert. The forest which commenced near Golmo ends here. There were a variety of small birds in it; and a bird like the golden pheasant, which I had noticed nowhere else, was here very numerous. We stopped here for two nights to allow our bullocks to graze as we were informed that there was no grass throughout the next stage.

82. On the 18th,  $4\frac{1}{2}$  miles from our encamping ground we forded a stream from the south-east.  $2\frac{1}{2}$  miles further we forded another from the south-east, and about three quarters

of a mile still further we crossed a third stream from the same direction: the water of all these three streams was brackish, that of the two latter particularly so. These two flow in deep channels and their beds and banks were incrustated with salt: there is no fresh water for miles. In winter travellers obtain it from the upper layer of ice on their frozen surfaces; but in other seasons they have to bring a supply of it from Hara-husun. After flowing north-westward for some miles these streams lose themselves in the desert. 2½ miles from the last brackish stream we crossed a pass with an easy ascent, and two miles further halted for the night. We found no grass and no water, but firewood was abundant. The chain of mountains we crossed to-day runs north of the Taichinar district from east to west, and is there of a sandy formation: it looked higher in the middle than at its eastern and western extremities. It separates the Taichinar and Korluk districts.

63. On the 19th, proceeding for about 3 miles we passed over a dry bed of a stream coming from the north-west, and 4 miles further crossed a low ridge which running to the north for 15 miles joins a long range of mountains nearly parallel to the chain mentioned above. 14½ miles further we reached Chakangnamaga, an encamping ground at the southern corner of a lake, called Thosu Nor (Tossun), about 12 miles long and 8 miles across where it is broadest. Its water is brackish and impregnated with sulphur. Close to the camp is a hot spring the water of which flows into the lake. Water for drinking and cooking purposes is obtained from the upper layer of ice from the surface of the lake. This camp is at the junction of the roads from the Taichinar and Jun districts and which proceed by the western and eastern shores of this lake respectively to Hoiduthara and Gobi in the Korluk district. This latter district is the granary of the nomads of Taichinar and Jun. The encamping ground abounds with firewood from dwarfed trees, but grass is scarce. We halted here a night. From Hara-husun to this place the path is good, but during the rainy season it becomes muddy and difficult near the salt-water streams before mentioned.

64. On the 20th December 1879, traversing the western shore of the lake for 12 miles we arrived at the right bank of a stream, 3 feet deep and 25 paces wide, named Korluk Gol (river), which emanating from the Korluk Nor (Kurlik) lake empties itself into the Tossun lake. The latter is said to have no outlet and is surrounded by a low sandy ridge. 1½ miles up the stream the route diverged from it, and 5½ miles onward we arrived at Sukhai, the winter residence of the Hoiduthara men, where about 100 tents were dotted about. The nomads remain here for four months in winter, pasturing their camels on the leaves of the dwarfed trees with which this plain, which is about 12 miles broad and 50 miles long, abounds, while they send their herds of ponies, goats, and sheep, to pasture on the rich grass and verdure of the mountains to the north of Hoiduthara. About 4 miles to the east is the Korluk Nor lake, 10 miles long and 9 miles broad, which is fed by a stream and a river; the former coming from the north-west waters the barley fields at Horga and Hoiduthara which produce large quantities of grain, and the latter from the far-distant east has Gobi on its right bank close to the lake. Gobi is a large nomad camp of 100 tents, and has some 10 subterraneous store-houses for grain, which are replenished from the annual produce of patches of cultivation round the camp. Fields after being once cultivated are allowed to lie fallow for the next three or four years that the soil, which is not manured, may recover its fertility. Before sowing the seed, the soil is turned up with a plough drawn by oxen, or with a kind of small pickaxe. Only one crop of barley and *no* is raised in the year: other grains do not thrive here, the climate being too rigorous. Gobi is about 17 miles distant from Sukhai which is on the opposite side of the lake. It is the seat of the *Besi* (chief). The tax varies from 1 goat to 8 sheep per tent according to the circumstances of the owner. The following is a common scale of barter in Mongolia:—

2 goats = 1 sheep

12 sheep = 1 colt (over a year old)

2 colts = 1 pony.

All disputes, civil or criminal, which arise within the *Besi's* jurisdiction are referred to him for decision. Korluk Nor lake is said to contain a great number of fish, but which are never disturbed by the Mongolians. The surface of the lake freezes in winter and after snow has fallen on it, it becomes the high road for travellers both on foot and horse-back. At Sukhai our Tengelik friends, who had come here for corn, settled their business and departed. As the sale of our merchandize, consisting of glass beads and such other valueless articles as the robbers had left, was very slow, we had no means of proceeding further and were obliged to wait at Sukhai for an opportunity. Happening one day to go to Gobi, we fortunately met a Tibetan of Gyántse, who finding us helpless treated us very kindly. He had some 20 years ago migrated to Sirthang in Korluk, where he married and settled and had now become a man of influence and position. He advised us to stay till the warm weather returned, when he promised to take us with him to his home and arrange for our journey onward: he engaged us to look after his camels in

return for our food. He had come to Gobi to attend to a case which was pending in the *Besi's* Court. We remained in his service at Sukhai and Hoiduthara for 2 months and 29 days, during which time I took latitude and boiling point observations at both places: (Sukhai lat.  $37^{\circ} 17' 23''$ , height 8,770 feet; Hoiduthara lat.  $37^{\circ} 20' 32''$ , height 9,200 feet). 5 peaks with patches of snow on them were observed from Sukhai bearing  $30\frac{1}{2}^{\circ}$ ,  $38\frac{1}{2}^{\circ}$ ,  $47\frac{1}{2}^{\circ}$ ,  $58^{\circ}$  and  $71\frac{1}{2}^{\circ}$  and distant 18, 20, 23, 24 and 26 miles respectively. These peaks are on a long range of mountains having a direction east by south and west by north.

85. About 20 miles to the east-south-east of Gobi and at the eastern extremity of the Korluk district, there is said to be a nomad camp named Golmo, containing about 40 tents and 10 store-houses like those at Gobi. About 55 miles further to the east is Khukhu\*, the seat of a *Beli*. *Beli* is a higher rank than that of *Besi*. Tulāng (Dulan-kitt), the seat of the *Whang* (Rāja) is said to lie 40 miles to the east-south-east of Khukhu. The *Whang* is the chief officer in the Koko\* Nor province, which embraces the Tulāng, Khukhu, Korluk, Taichinar, Jun, Baron, Shang and Banakasum districts. Nomads of the last district are addicted to robbery. They are of Tibetan descent and are distinguished from the nomads of the other districts in that they live in black tents made of yaks' hair, while the Mongolians occupy tents made of a coarse woollen fabric. The latter are an honest, hospitable and peaceful people. From Dulan-kitt, a road proceeding south-east for about 25 miles and thence north-easterly for about 40 miles, leads to the western side of the Koko Nor lake or Tso Onbo (blue lake). The lake is about 280 miles in circumference and is said to contain a small island, called Tso Ning (heart of the lake), on which is a *gom-pa* inhabited by 20 *Dabas*: there is also a spring of fresh water. The *Dabas* of the island gather their supplies of food during the four months of winter; the water of the lake is then frozen and affords a convenient means of communication with the shore. A considerable number of fish are taken from the lake for sale at neighbouring settlements. Salt found incrustated on the banks of the lake is also an article of merchandize. The Ambāns of Sining-fu, when on tour, halt at the lake for the sake of the fishing. At the south-eastern extremity of the lake is a large *gom-pa* called Kumbum, containing 8,000 *Dabas*, which is a great seat of religious instruction for the Mongolians. This lake is considered sacred and Buddhists circumambulate it as a meritorious religious performance, a dangerous pilgrimage as the southern shore is infested by robbers. Donkyr (Tankar) a well known place of commerce is said to lie 100 miles to the east. 80 miles further to the east is Sining-fu, where reside two Ambāns. Further to the east is Ālāsha, under the rule of a *Whang*. The present ruler is the son-in-law of the Emperor of China. Woollen carpets of every description are woven there.

86. Mongolians are Buddhists and hold Lhāsa to be a sacred city and the chief seat of learning: it is there only that the degree *Gisi* (learned) which is conferred by the learned members of the three *Gom-pas*—Ser-ra, Dre-phung and Gaden—can be competed for. The examination is difficult and entails more than 12 years' continuous study, principally of religious books. The following preliminaries have afterwards to be gone through:—the candidate provides a feast for the Lamas and *Dabas* of the *gom-pa* to which he belongs, at which he expresses his intention of competing. Information is then sent to the other two *gom-pas*; and a committee of examiners from among the possessors of the *Gisi* degree in the three *gom-pas* is appointed. A *Gisi* ranks higher than a *Daba*, but lower than a Lama, and is held in high respect by men of all classes. He is not allowed to marry or to cohabit with woman. Mongolian *Dabas* are not under the same rules of celibacy as those of Tibet, but may marry; they must however wear the usual special garments when they worship or perform any religious ceremony. Their *gom-pa* is a large tent wherein they place images of gods. Mongolians of the Koko Nor province pride themselves that amongst them was born a hero, named Tanjen Gombo, who having conquered Siling and Ālāsha finally became Emperor of China, and in whose family the empire still continues.

87. On the 28th February 1880, the settlers at Sukhai moved to Hoiduthara, 5 miles distant, to commence ploughing their fields. The sowing takes place in April and the harvest is reaped in September.  $\frac{3}{4}$  of a mile from Sukhai a stream was passed coming from the north-west and falling into the Korluk Gol (river) to the east; and  $2\frac{1}{2}$  miles further we crossed a small stream which joins the Korluk Nor lake. At Hoiduthara we spent 19 days herding camels; after which we were permitted to go to Sirthang, and three camels were lent us for our baggage. From Tengelik to Hoiduthara the route has almost a northerly direction but thence it turns west.

88. Leaving Hoiduthara on the 19th March, we crossed, a mile from that place, the stream which as before mentioned flows into the Korluk Nor lake. As there is no water on the road for some distance, a supply had to be taken hence. Three quarters of a mile farther and a little to the left is Horga, which has five store-houses for grain; and  $9\frac{1}{4}$  miles from Horga, we came to the dry bed of a stream coming from the west where we halted for the night. This

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\* The names 'Khukhu' and 'Koko' are derived from Colonel Prejevalsky's map. The Explorer says the names are identical and should be 'Khokho' which like 'Oubo,' signifies 'blue'.

water-course joins the stream crossed near Sukhai. Firewood was abundant, but there was no grass. Five peaks were observed bearing  $180\frac{1}{2}^{\circ}$ ,  $260^{\circ}$ ,  $308^{\circ}$ ,  $322\frac{1}{2}^{\circ}$  and  $356^{\circ}$  and distant 10, 11, 11, 12 and 19 miles respectively.

89. On the 20th March 1880, our route lay within a narrow valley and along the left bank of the dry water-course. After marching 8 miles we turned off the road to a spring about a mile to the left to obtain water. The road,  $5\frac{1}{2}$  miles beyond the point where we had left it, quits the dry water-course and follows another which joins the former from the west. 3 miles to north-west from this place is a spring of fresh water. 2 miles further we stopped for the night.

90. On the 21st, having proceeded  $5\frac{1}{2}$  miles, we observed a peak and a mound of red clay bearing  $37^{\circ}$  and  $324\frac{1}{2}^{\circ}$  and distant  $11\frac{1}{2}$  and  $3\frac{1}{2}$  miles respectively. The dry water-course ends here, and 3 miles beyond is a pass with an easy ascent. Thence, following a dry water-course for  $4\frac{1}{2}$  miles, we came to a spring of salt water, and half a mile further to a path which branches off to the right to Ikhe Tsaidam. This path though direct is seldom used by travellers owing to the scarcity of water. After another  $4\frac{1}{2}$  miles the route diverged from the water-course and entered a somewhat open country. Here pasturage for camels is abundant and a deep hollow between large boulders full of snow supplies water to travellers during four months of winter. The route from Hoiduthara to this place is generally somewhat stony and is narrow in parts.

91. Next day,  $6\frac{1}{2}$  miles from our halting place, we observed four peaks bearing  $305\frac{1}{2}^{\circ}$ ,  $308^{\circ}$ ,  $157^{\circ}$  and  $188^{\circ}$  and distant 32, 28, 21 and 14 miles respectively. Of these the first two are snowy peaks; the last two had been already observed from Tengelik. 16 miles further we arrived at Sondshu (Chonju) situated in a grassy plain, and watered by a stream issuing from the mountains to the north-west and disappearing in the desert, after a south-eastern course, a few miles south of Sondshu. We were told that some of the nomads of Baga Tsaidam come here to pasture their cattle during February, March and April. From Sondshu a path branches off to the left to Thugthe, in the Taichinar district, which is generally used by the inhabitants of that district when they require to purchase corn at Hoiduthara. We stopped at Sondshu for two nights. To-day's route lay in a level plain. Firewood from bushes was abundant.

92. On the 24th, following up the stream for 2 miles, we crossed it at a place where it is 15 paces wide and  $1\frac{1}{2}$  feet deep, and from the other side we observed two peaks bearing  $194\frac{1}{2}^{\circ}$  and  $259\frac{1}{2}^{\circ}$  and distant 13 and  $8\frac{1}{2}$  miles respectively. 5 miles further on we arrived at the base of a spur from the range of mountains to our left, and travelling thence 6 miles, observed the eastern corner of a lake called Baga Nor, bearing  $267\frac{1}{2}^{\circ}$  and distant 3 miles. This lake, of which the water is somewhat brackish, is an irregular oblong in shape, about 6 miles long and 4 miles broad.  $11\frac{1}{2}$  miles beyond, the route brought us to Baga Tsaidam, where there are about 50 scattered tents. As there is no cultivation on this side of Horga supplies are dear: firewood is obtained from the distant mountains, and dry yak and cow dung are also used for fuel: grass and water were abundant. *Tsaidam* signifies a trading place or market, and such was Baga formerly, as the Chinese resorted to it for borax, which is found incrustated on the margins of the Baga Nor and Ikhe Nor lakes. We remained here two nights.

93. Leaving Baga Tsaidam on the 26th, and proceeding  $7\frac{1}{2}$  miles we arrived at a large spring of fresh water, from which place the route continues along the base of the mountains on the right; and  $6\frac{1}{2}$  miles further, we crossed a pass with an easy ascent. This range of mountains terminates abruptly about 8 miles to the east. Descending gradually for three-quarters of a mile, we observed two high snowy peaks bearing  $353\frac{1}{2}^{\circ}$ ,  $350\frac{1}{2}^{\circ}$  and distant 33 and 31 miles respectively, and proceeding  $4\frac{1}{2}$  miles further over a level plain, we crossed the stream flowing south-east to Sondshu.  $3\frac{1}{2}$  miles further, we struck the direct route to Ikhe Tsaidam, which had branched off to our right, and there halted for the night.

94. On the 27th, we re-crossed the above mentioned stream, about 4 miles from our halting place, now flowing from the north, and saw some 15 tents of Mongolian nomads scattered along its banks. There is a hot spring about 2 miles to the north. 9 miles onward, we arrived at Ikhe Tsaidam, where there are 100 scattered tents. This place formerly exported borax to China. Ikhe Nor lake, close by, is 16 miles long and 8 miles broad and is supposed to be fed by springs only, several of which were visible from the road along its margin. Supplies are procurable although dear: grass and firewood are abundant. Observations of boiling point were taken here (height 10,480 feet), and two snowy peaks, bearing  $33\frac{1}{2}^{\circ}$  and  $28^{\circ}$ , distant 20 miles each, were also observed.

95. On the 29th March 1880, proceeding 13 miles, the route crossed over a stream,  $1\frac{1}{2}$  feet deep and 35 paces wide, flowing from the north and losing itself in the desert to the

south.  $3\frac{1}{2}$  miles further is Ijia, close to a range of hills, where there is a large spring of fresh water said by the inhabitants of the Korluk district to be very wholesome. Ijia is covered with rich pasturage and is frequented by the nomads of Ikhe Tsaidam during March. We stopped here for the night.

96. On the 30th, after proceeding  $8\frac{1}{2}$  miles, we crossed a low spur from the range of hills to our left, and  $3\frac{1}{2}$  miles further on we forded a brackish stream, 3 feet deep and 5 paces wide, running from a bearing of  $32\frac{1}{2}^{\circ}$ . 11 miles onward is a stream of fresh water,  $1\frac{1}{2}$  feet deep and 25 paces wide, flowing to the south, from which a path leads to Makhai, a nomad camp about 30 miles to the west by south. This encampment of some 40 scattered tents, is in a dense jungle of trees of about the same height as those found in the Taichinar district. It is from Makhai that the Mongolians of the neighbourhood obtain the material for the wooden framework of their tents. Proceeding up the bank of the stream for 2 miles, we arrived at Urel, 3 tents, where we passed the night. Grass and firewood were abundant.

97. On the 31st, having filled our leather bags with water, we left Urel at 8 A.M. and after a march of 11 miles crossed a low pass and camped for the night 2 miles beyond in an uninhabited place. Here we found no water or grass but firewood in small quantities was available. To-day's route was over sand and in parts over stony ground.

98. Leaving early the following morning, after  $7\frac{1}{2}$  miles we entered a large open plain; and journeying across it for  $26\frac{1}{2}$  miles reached Chāga also called Ulan Guzar, an encamping ground, close to a spring of fresh water. From this place a road leads to Makhai to the south. There was no water or grass between Urel and Chāga.

99. On the 2nd April, after proceeding 4 miles we came to an *Obo*, a place of worship, where there are a number of flags on an artificial mound; and some 15 tents are scattered about.  $13\frac{1}{2}$  miles further is Yembi, in Sirthang.

100. Sirthang is an extensive grassy plain surrounded on all sides by a sandy waste called Shialla. The plain is about 20 miles long with an average breadth of 17 miles, and is irrigated by several springs of fresh water. A few small pools of salt-water supply the inhabitants with salt. There are two lakes, of which the water is drinkable, one to the N.N.E. and the other to south-west of Yembi, about 9 miles apart, and which are joined by a small stream issuing from the former and flowing into the latter. They are nearly equal in size, about 4 miles long and  $2\frac{1}{2}$  miles broad, and are full of fish on which a kind of otter preys. There are some 300 tents scattered about Sirthang; but this number is reduced to 50 in the winter when the cattle, especially the young ones, are, for protection against the extreme cold, driven into the small narrow valleys on either side of the northern range, which is about 30 miles distant: good pasturage abounds in these valleys.

101. Wild people exist in some of the valleys of the northern range. They have a thick and dark skin, are well built and apparently well fed. They wear no clothes except skins; nor do they dwell in either tents or huts, but live in caves and glens and under the shelter of overhanging rocks. They are ignorant even of the use of arms in the chase, and lie in wait for their prey near springs of water or where salt incrusts. They are said to feed even upon rats, lizards and other small animals. They are remarkable for their swiftness of foot, and when pursued even a horseman cannot easily catch them. Whenever they see a civilized man they run away in great terror. They are said to know how to kindle a fire with the aid of flint. They flay the animals they kill with sharp-edged stones. Sometimes, but very seldom, they steal goats and sheep grazing in the valleys.

102. The wild ass, chamois, yak, wolf, rabbit, brown bear, beaver, &c., are met with: the Bactrian camel and the horse are also found here in a wild state. It is believed that at a very remote period a Mongolian army from Thorkoth, invaded Tibet to assist the Lhāsa Government against its petty neighbours then ruling in Ngari Khorsum and Ladākh; and the specimens of these domestic animals, now existing in a wild state, are supposed to have sprung from stray animals of that army. The Mongolians of the vicinity believe themselves to be descendants of the followers of the same army, and say that the country before that invasion was uninhabited. All these animals excepting the wild horse are hunted, some for their flesh, some for their hides and others for both. Neither of these in the case of the wild horse are said to be useful.

103. It does not rain more than three times during the whole season; thunder and lightning are rare too; snow falls very seldom. From February to June dust storms, which occur almost daily, are very troublesome, one sometimes lasting for a week continuously: from the middle of June to the middle of September the springs remain unfrozen.

104. The Mongolians have built a *kacha* walled enclosure at Yembi for their Lama, who is looked up to by all as their spiritual guide. They are tolerably well off though there is no



cultivation; for they obtain what is needed from Saitu, about five days' journey distant. There they exchange camels, goats, sheep, horses, wool and butter for corn: corn is also brought from Nāichi and Nāhuli. The articles of their diet are nearly the same as before described. Cooking and other utensils are obtained from China. The dress of both sexes is very similar; it consists of a long garment very like a large *choya* in shape. It is made of either cured skins, felt, coarse woollen cloth, or broadcloth of bright colors. The first is worn in winter, the second during the spring, the third in summer and the fourth on occasions of festivity.

105. Thorkoth, an extensive and rich tract of Mongolian territory, lies about a month's journey to the north-west of Sirthang. It is governed by a *Whang*. For several generations past these *Whangs* are said to have died at an early age, leaving the management of the territory to their wives. The mother of the present young Rāja, fearing the same fate for her son, sent for several distinguished Lamas to perform some religious ceremony to insure a long life for him. A Tibetan Lama then in Sirthang, a native of Tsang in Tibet, and believed to be an incarnation of the Lama of Thuden Gom-pa, in the Derge district, was also asked to join in the ceremony. He is a man well instructed in religious matters and had been previously summoned by the inhabitants around the Koko Nor lake to pray for the prosperity of their country, and had now come to Sirthang to perform a sacrifice with the object of warding off an incursion of the Banakasum robbers, about 1,000 in number, who had resolved to make a raid on that territory. This Lama refused to go to Thorkoth on the ground that he had other matters to attend to. He is revered by all the Mongolians at Sirthang and many of them visit him daily and offer him presents. It is customary for visitors to kneel down three times before him and to offer him a *khatak*\*, when he places his hand on their heads. He is very friendly towards Tibetans.

106. After spending some three months at Yembi in selling the merchandize left us by the robbers at Tengelik, and waiting for any traders proceeding to the Lob Nor, we eventually resolved to go to Saitu. The merchandize we disposed of here consisted of small beads of red clay and of myrobalans. The latter found a ready sale at the rate of 2½ rupees a seer, but as the former were not articles in much request, being only worn by women in necklaces, we were a long while in disposing of them; we also sold our woollen *chogas*. All these articles fetched about Rs. 200 in silver, three horses and four colts. As one of our companions, Gangārām had heard that the *Hu Hu* (Muhammadans of China) were at war with the Emperor of China, he was afraid to accompany me further and desired to remain in the Koko Nor province for some years. He tried to instigate my companion Chambel to desert me, and indirectly tried to persuade even myself to give up my design. Finding me determined to go to Saitu, he one day during my temporary absence despatched Chambel to a distant place to fetch some goats due to us in exchange for some articles of merchandize and availed himself of this opportunity to desert us, carrying away with him 150 rupees worth of silver, two horses and three colts, together with a small telescope. This happened in July 1880. Next day when I returned I found no one in my tent; but Chambel's explanation on his return with the goats soon after, and the remembrance of the other's previous attempts to dissuade us from proceeding further left no doubt of his desertion. Our position now was very desperate as we had scarcely 50 rupees worth of things left. A friend who heard of the case sympathized with us and was ready to send men to seize him; but some travellers arriving at that time to visit the Lama informed us that they had met him at Urel and that he had told them to let us know that he would return after three months should he have sold the ponies. We had however no hope of seeing him again. Being reduced to such straits we were obliged to again take service; and we tended herds of ponies and goats for about 5 months; but then getting tired of that work we determined to move on with the limited funds we possessed and when those should fail to beg our way.

107. On the 3rd January 1881, as some men were going to Saitu to exchange goats and sheep for corn, we obtained our employer's permission to go with them. He was a thorough gentleman, and on our departure, he gave us a horse worth Rs. 40 and warm clothes together with provisions. Observations for latitude and boiling point were taken at Yembi (lat. 38° 57' 30", height 9,690 feet).

108. Proceeding 3½ miles from the Lama's walled enclosure at Yembi, we crossed the stream, 2 feet deep and 15 paces wide, which joins the two lakes. From this place we observed a high snowy peak called Amandapāra bearing 310° and distant about 30 miles, which the inhabitants of Sirthang suppose to be the abode of *Shibdag* (the protecting god) of Sirthang.

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\* *Khatak* is a thin cloth made from the bark of a tree or of silk and is of various sizes, the smallest being a foot long and three inches broad and the largest a yard long and half a yard broad. The presentation of a *khatak* is a common mode of interchanging civilities. When a man writes to or visits a friend he encloses or presents the smallest one; but the size is increased in accordance with the rank and position of the person to whom it is presented. If one person goes to condole with another, or to attend a marriage ceremony, he presents a *khatak*. The non-observance of this custom is considered a mark of rudeness and want of etiquette.



At several places in Sirthang, *Obos* (poles to which strips of cloth are attached) are erected where incense is burnt to propitiate that deity.  $6\frac{1}{2}$  miles further, we arrived at Harasirig, an encamping ground at the other extremity of the Sirthang plain, where we halted for the night.

109. On the 4th, we left the encamping ground, and traversing the sandy tract, about  $13\frac{1}{2}$  miles broad, forming the northern border of Sirthang, we arrived at a dry water-course running from a narrow valley from the north-west. Proceeding up this ravine for 3 miles we crossed a pass with an easy ascent, and thence following another dry water-course for  $3\frac{1}{2}$  miles we passed over a spur, at the base of which this water-course meets a small stream of water. A mile further, we found a Mongolian tent on the right bank of the stream which flows hence for  $7\frac{1}{2}$  miles in such a narrow ravine that travellers have to walk over its frozen surface or wade through it, according to the season. The valley then opens into a sandy plain and near its northern extremity is an encamping ground where we stopped for two nights. Grass and firewood (from small bushes growing along this range) were abundant; we had to-day a fall of snow, about two feet in depth. We had heard at Sirthang that about 3 miles to the west of this encamping ground was a tent occupied by an old woman, who with her husband had in their youth been carried away by *Tānthus* (men with white turbans) of the Lob Nor district, formerly occupied by Mongolians, and we went to see her. She told us that the Lob Nor lake, around which is a population of *Tānthus*, Muhammadans by religion, was distant about 250 miles to the west; that the route leading to it was uninhabited and water and grass could only be procured at certain places known to those who frequented it. She advised us to return to our tent before evening, because a *demo* (brown bear) had lately committed great ravages in the neighbourhood. We met no bear, but the old woman's son, who accompanied us for some distance, pointed out to us a wild man, on an opposite spur about 2 miles off, coming towards us, but who on perceiving us turned back. As he was at so great a distance we could not see him well enough to verify or add to the description already given. From this encamping ground we observed a high snowy peak close to Amandapāra bearing  $248\frac{1}{2}^{\circ}$  and distant 34 miles.

110. On the 6th, after traversing for about a mile the bed of the stream which disappears near the encamping ground, the road diverged from it, and  $17\frac{1}{2}$  miles further we arrived at a small spur from a sand ridge running east to west. From here a road branches off to Nāiche city about 55 miles to the east. This city is said to contain a *bāzār* surrounded by houses (built of unburnt bricks) about 1,000 in number, and is well known as a market for the sale of corn, the produce of the surrounding fields. Proceeding for  $6\frac{1}{2}$  miles between two sand spurs we stopped for a night at the base of the sand ridge where we found neither grass, water nor firewood. Of the latter we had however brought a supply, and having found some snow in a sheltered place we melted it.

111. On the 7th,  $1\frac{1}{2}$  miles from our halting place we crossed the sand ridge and traversing a sandy plain 11 miles broad, we arrived at Chāngja, an encamping ground on the left bank of a river. Here, we found grass and firewood and a few dwarfed trees. A cart-road runs up the left bank of the river to the south-east whence firewood and a sort of long grass are brought to the cities of Saitu and Nāhuli. The carts are like those common in India but are drawn by horses.

112. On the 8th, following the left bank of the river for  $3\frac{1}{2}$  miles, we crossed a low sand-hill, and  $3\frac{1}{2}$  miles further found a house which had been built by some charitable person for the convenience of travellers, in one of the rooms of which was a shop for the sale of refreshments. From here a road branched off to Nāhuli, about 20 miles north, containing about 500 houses (of sun-dried bricks) and a small *bāzār* for the sale of grain grown in the vicinity.  $1\frac{1}{2}$  miles further were two more houses for travellers, and  $12\frac{1}{2}$  miles onward again, we reached the suburbs of Saitu, where we saw some cultivated fields, and houses here and there. Passing through these for  $1\frac{1}{2}$  miles we crossed the river by a bridge 250 paces long and 5 paces broad with railings on both sides of it. This river, to which we heard no particular name assigned, and which therefore has been named Saitu, is here made to flow in two deep narrow channels by a large mass of masonry built in the middle, on which and on the masonry on either side of the narrow streams, the bridge is supported. The bridge consists of timber covered over with planks and a layer of *kankar* (a kind of limestone) so as to make it passable for carts. The river abounds with fish which are caught by angling. 300 paces from the eastern end of this bridge is the fort of Saitu.

113. Saitu (called Sachu by Mongolians) is a large fort within which are the palace of the Governor and many houses. It is situated on the right bank of the river, which after watering the patches of cultivation near Saitu ultimately disappears in the sandy waste to the north. It is irregular in form and construction and about 6 miles in circumference. The outer wall, which is throughout of sun-dried bricks plastered over with earth, is loop-holed, has bastion-towers, and is protected by a ditch. Its western face is separated from the suburb

that extends to Nāhuli, by the river which is the only source of water supply. Saitu contains a long *bāzār* with a *kacha* road passing through it. On either side of the *bāzār* are single storied houses built of sun-dried bricks, containing several rooms, one of which is set apart as a sleeping place for the servants; round its wall a platform runs, about 3 feet high and 5 or 6 feet broad, for the servants to sleep on, and under which are small recesses for fires to warm the platform during winter. There are no apertures to carry off the smoke. The estimated number of houses in the fort and suburbs (excepting the western across the river) amounts to 2,000.

114. The religion of the inhabitants of Saitu is Buddhism; but it is not so strictly observed as in Tibet. They have no caste system.

115. The following is the scale of weights used in Mongolia and Saitu:—

- 10 *Chens* = 1 *Len*
- 16 *Lens* = 1 *Jing* (=50 *tolas*)
- 25 *Jings* = 1 *Dug*
- 10 *Dugs* = 1 *Ten*

In exchange for a sheep, worth 4 *chens* of silver (= 1½ rupees of Indian currency), 3½ *dugs* of wheat are given. *Ne* and millet are also sold at the same rate. Besides these, other grains, *viz.*, *kauli* (a kind of corn found in Saitu and used for distilling liquor), Indian corn, *masūr* (a kind of pulse) and *matar* (a pea) are cultivated. Rice is dear as it is imported from Yārkaṇḍ. There are no water-mills for grinding corn, but mills worked by horse power are employed instead.

116. Saitu surpasses Tibet and Mongolia in the excellence and abundance of its fruits and vegetables; these are however inferior in flavour to those of Yārkaṇḍ. Among the fruits and vegetables are the apple, pear, plum, cucumber, melon, water-melon, mulberry, walnut, guava, radish, carrot, turnip, mustard, &c. Sugarcane is unknown but a kind of honey-cake is brought from the north. Cotton is cultivated and manufactured into a kind of coarse cloth. Cho Gombo, the Governor of Laindu Chondu (one of the provinces of the Chinese Empire to which Saitu is subordinate) having come here on a tour of inspection, has lately established a manufactory for weaving silk cloth, and has also entertained ten good workmen for teaching the art of silk-weaving at Saitu. The chief articles of diet are bread, preserves, cooked esculent vegetables, meat and milk. Pigs and fowls are reared, because the flesh when boiled is much esteemed.

117. The climate of Saitu is generally healthy, and bears a great resemblance to that of Yārkaṇḍ. The inhabitants of Saitu are not so stout or well built as the Mongolians: the color of their dress is generally black or blue, white being employed for mourning. They wear clothes padded with cotton in winter. They keep locks of hair on the top of their heads, which are plaited and hang down behind. The women wear a cap of the Chinese pattern and several coats of various colours put on in such order that the sleeves of the innermost extend to the wrist, whilst those of the others decrease in succession: over these is worn a short coat which comes down a little below the hips having sleeves reaching a little short of the elbows; a loose pair of *pyjamas* (trousers) in place of a petticoat completes the costume. Their feet are very small being not more than six inches in length. When a girl is three years of age, an iron chain of more than a seer in weight is hung round her neck, and when she attains her fifth year this chain is removed and her toes are bound with strips of cloth so as to cause them to turn inward: this unnatural twist of the toes sometimes produces sores. Women never expose their feet before men.

118. The *kurs* (an ingot of silver = about 156 rupees) is the current coin; there are two smaller silver coins of the same shape, one weighing five and the other ten *lens*, equal to Rs. 15-10 and Rs. 81-4 respectively. Ordinary lumps of silver are used for smaller change, which necessitate weighing and testing; and for smaller change than these even, brass coins are used, 500 of which equal one rupee.

119. On the 18th January 1881, we started in the company of some traders going to Thorkoth; but before we had proceeded a mile from the fort, we were overtaken by a horseman who ordered us to accompany him back to the Governor of Saitu. The Governor questioned us as to who we were and where we intended to go: he took us for thieves or spies from some foreign country and ordered us to remain at Saitu till we could procure security for good behaviour. He placed us under the control of a rich man in the fort and told him to watch our movements. As it was very expensive to keep ponies we sold ours at once, and not knowing what length of time we might be detained, we set up as fruit-sellers to obtain a livelihood. Here I suffered from a peculiar disease called by the natives *bam* in which red blotches appear on the legs, making it difficult to walk or even stand up. It is accompanied by fever and loss of appetite, and in some cases by looseness of the teeth also. This complaint I was told is brought on

by walking bare foot on a particular kind of soil, and if not properly attended to, disables a man for life from using his lower limbs. Various heating and intoxicating drugs were administered, and some plasters applied; but what I found most efficacious was radish juice rubbed over the afflicted limb, which was then wrapped round tightly with cloth and kept warm, this brought on perspiration and gradual relief. After seven months a friend from Sirthang arrived here to visit Sange Kuthong (1,000 images), a sacred place of worship about 6 miles distant and bearing  $122\frac{1}{2}^{\circ}$ ; and being an old acquaintance of the person under whose charge we had been placed, he came to his house and recognising us obtained permission for us to return to Tibet. During the time we remained here we found no opportunity for taking latitude or boiling point observations. Seven days later we left Saitu with our former acquaintance and returned to Yembi which we reached on the 15th August 1881.

120. We remained at Yembi for 19 days, and as a direct return to Tibet with the limited means at our disposal, and from considerations of safety, was impossible, we took service with our friend who was going to Thuden Gom-pa in the Derge district, and started on the 3rd September with some Mongolian traders. Retracing our steps *viâ* Chāga (Ulan Guzar), Urel, Ijia, Ikhe Tsaidam, Baga Tsaidam, Sondshu (Chonju) and Sukhai, we arrived at Chakangnamaga on the 17th September.

121. Next day we marched 22 miles over a sandy plain to Mochiangai encamping ground. Grass and firewood were obtained but there was no water.

122. On the 19th, after marching  $1\frac{1}{2}$  miles we crossed a low sandy hill and traversing an undulating sandy plain 12 miles broad, we entered a level sandy plain. 6 miles further we crossed a salt-water stream coming from the south-east, and 9 miles further still, forded a branch of the Bai Gol (river), 2 feet deep and 20 paces wide, which, flowing to the west for some miles, intersects our previous route to the Chakangnamaga encamping ground, near Hara-husun and where it is called by that name. 3 miles to the south from the left bank of the river is a house belonging to the *Jhāsa* of Jun. Near this house there are said to be some 50 tents, and the road from Lhāsa to Sining-fu passes by it. This place is known as Jun Tsaidam. We passed the night on the left bank and found grass and firewood in abundance.

123. On the 21st, proceeding 3 miles we forded the Bai Gol (river), 3 feet deep and 50 paces wide, which flowing to the west intersects our previous route near Tengelik. This river issues from the Alak or Alang and Thosu Nor (Tossun) lakes, and the two branches after flowing through the Shang district and uniting in the vicinity of Shang Tsaidam, divide into two streams some miles east of the *Jhāsa's* residence. 9 miles from the Bai Gol (river) we entered the Baron district. The Jun district, which extends from the salt-water stream to the Baron boundary, contains some 500 tents, and is similar to the Taichinar district in its cultivation, forest, &c.  $4\frac{1}{2}$  miles from the Baron boundary we arrived at Gakcharnamaga, a Mongolian nomad camp containing 30 tents. At the distance of  $1\frac{1}{2}$  miles from this encampment and bearing  $132\frac{1}{2}^{\circ}$  is Baron Tsaidam, containing 10 houses and some tents. It is the residence of the *Jhāsa* of Baron, who has some cultivated land in its vicinity. We remained in this district for 14 days, while the chief of our party sent his servants to collect some property which he had deposited in some of the *gom-pas* in the neighbourhood. We here heard that Gangārām was at Banakasum where the black tent nomads reside; and we sent a man to persuade him to rejoin us. On this man's return we learnt that Gangārām had feigned illness and was afraid to return to us. He had purchased herds of goats, sheep and mares with the intention of settling in the district of Shang, and sent word to us to give up the journey for the present and to join him.

124. About 30 miles to the east is Shang Tsaidam, in the Shang district, containing about 50 houses and the same number of tents. It has a small *gom-pa* inhabited by about 50 *Dabas*, and there is said to be cultivation in the neighbourhood. It is reported that this district was given to the Lama of Tra-shi-lhun-po Gom-pa by the Emperor of China for performing a number of miracles before him. The Lama has full power over the district which is inhabited by Mongolians. The tract of country which includes the districts of Taichinar, Korluk, Jun, Baron and Shang, is called Thābu Tsaidam on account of the five *Tsaidams*, *viz.*, Ikhe Tsaidam, Baga Tsaidam, Jun Tsaidam, Baron Tsaidam and Shang Tsaidam, being situated in it. To the east of Shang is Banakasum, a district full of robbers; and to the south-east of the latter is the Chiāmo-Golok district, the inhabitants of which are also addicted to robbery. It is said that they once robbed an Ambān who was returning to China *viâ* Sining-fu. To the north of Chiāmo-Golok is a snowy range called Amnimanchenponra, lying east and west, some peaks of which are believed to be holy by the Buddhists who go round them as a religious performance. To the east of Chiāmo-Golok is a large district called Amdo. The inhabitants of the last three districts—Banakasum, Chiāmo-Golok and Amdo—bear a strong resemblance in language, manners and customs to Tibetans.

125. On the 7th October, after replenishing our stock of provisions and collecting such other articles as were needed, our party left Gakcharnamaga under the guidance of two

Mongolians and proceeding  $13\frac{1}{2}$  miles arrived at Hadho where there was cultivation and where we stopped for a night. Our employer had now 30 ponies with him, and as each of his servants had charge of some of them, we also were allotted a number to look after. The Lama here compelled us to travel on horse-back in order to get over this part of the journey quickly and thus avoid the robbers.

126. On the 8th, we entered a narrow valley and after proceeding  $\frac{2}{3}$  of a mile, crossed a stream flowing to the north and following up its left bank for  $14\frac{1}{2}$  miles, we recrossed it and stopped for the night. A foot of snow fell here. There are no habitations, but during winter the nomads of the Baron district bring their cattle here for pasture. We saw here a novel spectacle. A *demo* (brown bear) was found taking out *chipis* (marmots) from their den; as soon as he had got one out, he put it under his hind-quarters and thinking that he had thus secured his prey commenced his search for another. This necessitated his inclining forward which gave the poor captive opportunity to get up and escape. The bear continued his labour till they were all taken out, but at last found that all those he had captured before had escaped and the one he had last got hold of was his only prey.

127. The next day, after a difficult ascent of  $3\frac{1}{2}$  miles, we reached the Namohon pass, across the Angirtakehia range, and descending thence for  $5\frac{1}{2}$  miles along a stream we arrived at a place whence it flows to the south-east. An open valley about 8 miles wide and extending east and west now lay before us; and we learnt that at a distance of 50 miles to the east was a lake called Dungar, about 20 miles in circumference, situated to the north of and at the base of the Amnimanchenponra range. Proceeding 3 miles across the valley, we forded the branch of the Bai Gol (river),  $1\frac{1}{2}$  feet deep and 20 paces wide, which emanates from the Alak or Alang lake. This lake is about 3 miles to the west, is about 5 miles long and 4 miles broad, and is fed by two streams from the south. The robbers of Banakasum and Chiämo-Golok districts adopt the route along this valley in their plundering excursions against the Mongolians to the west. 4 miles further we crossed one of the streams which fall into the lake, on the banks of which the inhabitants of the Niamcho district sometimes wash for gold. Proceeding  $5\frac{1}{2}$  miles up this stream we stopped for the night. We found water and grass in abundance, but there was a scarcity of fuel.

128. On the 10th October 1881, after proceeding  $4\frac{1}{2}$  miles, we crossed a pass with an easy ascent, and 5 miles further reached another low pass. Descending  $3\frac{1}{2}$  miles along the left bank of a stream which then turns to a bearing of  $237\frac{1}{2}^{\circ}$ , we proceeded  $2\frac{1}{2}$  miles further and arrived at a place suitable for encamping: fuel, grass and water were abundant and the ground level and good. It was a good place for hunting and we succeeded in shooting some deer.

129. On the 11th, we marched  $5\frac{1}{2}$  miles along an elevated table-land and then descended for  $1\frac{1}{2}$  miles and crossed a stream flowing to the west. Ascending 3 miles we reached the top of a spur and thence descending along a tributary of the Ma Chu\* for  $3\frac{1}{2}$  miles, forded that river a little below its confluence. At a distance of 3 miles to the east this river falls into the lake called Tso Kiäring Kuring, 10 miles long and 3 miles broad, and issuing from the lake again it flows in an easterly direction and is said to pass by the town of Pechin (Pekin). This river was 4 feet deep and 300 paces wide. Proceeding  $1\frac{1}{2}$  miles, we stopped for the night about half a mile to the east of a walled enclosure on a low isolated hill, where we found fuel, grass and water.

130. Next day our road had a gentle upward gradient for 3 miles, and then descending crossed the Ma Chu river twice in  $1\frac{1}{2}$  miles and entered a plain called Karmathang, 15 miles long and 8 miles broad. Traversing this plain we arrived at a low pass, distant  $9\frac{1}{2}$  miles from the left bank of the river, and descending gradually from it, we proceeded along the base of the hills to our left and ascending them arrived at a pass about 3 miles distant from the preceding one. Following down a stream for  $1\frac{1}{2}$  miles we turned to the south, and  $1\frac{1}{2}$  miles further crossed a small spur. This stream flows to the north-east and is one of the tributaries of the Ma Chu river. 4 miles more brought us to the left bank of another stream from the south-west, which rising in the Lamathologa range and watering the plain called Jingmathang, joins the stream before mentioned. We halted for the night on the left bank where we found fuel and grass in abundance. In this plain and about 2 miles to the north-east of our halting place is a lake  $1\frac{1}{2}$  miles long and of about the same breadth.

131. On the 13th, a snowstorm caused us to miss the direct road and we followed up the left bank of the stream, and after 13 miles arrived at a pass over the Lamathologa range (round like Lamas' heads) which contains several round peaks. Descending for a mile we arrived at a halting place bearing the same name as the range. We stopped here for the night: grass, fuel and water were abundant.

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\* This river is distinct from those bearing the same name previously mentioned.

132. On the 14th, proceeding  $5\frac{1}{2}$  miles along the right bank of a stream issuing from this range, we crossed the Dugbulāg stream,  $1\frac{1}{2}$  feet deep and 15 paces wide, and flowing to the east, near the place where the stream joins it. We saw a large number of wild yaks grazing along the banks of this stream. These animals come so seldom in contact with any human beings that they did not even notice our presence, but I was informed that sometimes when excited they would attack passers by. The Dugbulāg stream forms the northern boundary of the Niamcho district.  $5\frac{1}{2}$  miles further, we met two men of the Niamcho district, who informed us that some fifty mounted robbers from the Chiāmo-Golok district had lately gone up the Dubulāg valley to the west, to plunder travellers *en route* from Lhāsa to Sining-fu. Continuing our march for  $6\frac{1}{2}$  miles, we crossed a small spur and proceeding thence  $2\frac{1}{2}$  miles along the left bank of a stream, we stopped for the night near the northernmost winter encamping place of the Niamcho nomads. The Mongolian guides who accompanied us from Baron were now no longer required, as the road could be easily traced; they were therefore dismissed. The road from Baron Tsaidam to this place is good and level excepting the hilly portions where it is rough and stony.

133. Crossing the stream on the 15th, and proceeding 6 miles along its right bank, we recrossed it a little below its junction with another stream from the south. The joint stream, about  $1\frac{1}{2}$  feet deep and 15 paces wide, flows hence to the south-west. Going up the stream flowing from south for 5 miles, we crossed a low pass where we saw several springs of fresh water which feed two streams, one flowing to the north and the other to the south along the route.  $2\frac{1}{2}$  miles from the pass a stream from the west joined the one flowing along our route; and  $5\frac{1}{2}$  miles onward another stream from the same direction fell into it. Here we found three tents of the Niamcho nomads, and halted for the night: grass and fuel were abundant.

134. On the 16th October 1881, marching for  $5\frac{1}{2}$  miles along the above mentioned stream, which is fed by three smaller streams, two from the east and the third from the west, distant 3,  $4\frac{1}{2}$  and  $5\frac{1}{2}$  miles respectively from the last halting place, we arrived at a hot spring. 9 miles further along the same stream which receives in its course three more tributaries, one from the east, another from the north-east and the third from the south at the distances of 4, 7 and 9 miles respectively from the hot spring, we encamped for the night. The stream which we had followed now turned to a bearing of  $242\frac{1}{2}^{\circ}$ : it was  $2\frac{1}{2}$  feet deep and 25 paces wide. We passed *en route* some tents appertaining to the nomads of the Niamcho district and also found a number of them near the halting place. Grass and fuel were not easily procurable here, and to-day's road was rough and stony.

135. On the 17th, we went up the stream coming from the south and after  $2\frac{1}{2}$  miles crossed a low pass. Descending thence for  $\frac{3}{4}$  of a mile and proceeding  $1\frac{1}{2}$  miles over level ground, we observed a snowy peak, believed to be sacred and named Gārtojhio, bearing  $304\frac{1}{2}^{\circ}$ , and distant 4 miles. At a distance of 2 miles to the west is the village of Niamcho, where there are about 100 tents and 50 houses, and which is the residence of the ruler of the district. This district has a population represented by about 1,000 tents; and the fields in the vicinity of Niamcho village are said to be cultivated to some extent.  $2\frac{1}{2}$  miles further on, we crossed a stream,  $1\frac{1}{2}$  feet deep and 15 paces wide, which flowing to the west joins the large stream mentioned before as going towards a bearing of  $242\frac{1}{2}^{\circ}$ , and which finally empties itself into the Di Chu. Niamcho lies a little to the west of this junction. Proceeding  $2\frac{1}{2}$  miles up the stream, we arrived at a halting place where grass and fuel were abundant. The road was stony and rough.

136. On the 18th, continuing our march up the stream, we crossed after a short distance a small stream from the south falling into it; and after  $5\frac{1}{2}$  miles our route diverged from it and turned up another small stream from the south.  $2\frac{1}{2}$  miles further, we stopped for the night at the foot of the pass where there was a scarcity of grass and fuel. The road to-day was uneven.

137. Next day a steep ascent of  $1\frac{1}{2}$  miles brought us to the pass, which was covered with three feet of snow. After a difficult descent of  $2\frac{1}{2}$  miles we followed the left bank of a stream which issues from this range, and after  $4\frac{1}{2}$  miles arrived at Dzingo village, containing 10 houses and having some cultivation. This is the first village we met with on our route since we left Baron Tsaidam. Still following the stream for 2 miles, we passed a village of 8 houses nearly opposite to which a small tributary entered the stream from the north-west. Two miles further on, the stream we were following joins another stream, 2 feet deep and 15 paces wide, coming from the east, and the united stream after flowing to the west turns abruptly to the south and falls into the Di Chu. Marching three-quarters of a mile up the stream coming from the east we entered Tindhu village, containing 10 houses, where we halted for the night. The Niamcho district extends to the last mentioned pass: to the east of Niamcho are three more districts named Magonzen, Garoche and Jachukha. Below the pass lie the Gāba and Rablu *parganas* of the Derge district.

138. Leaving the village on the 20th, and proceeding up the stream for  $1\frac{1}{2}$  miles, we arrived at a *gom-pa* named Kanzo, which contains a celebrated image of *Jhio* (a Buddhist god). This is believed to be a holy place and is inhabited by 150 *Dabas*. Crossing the stream to a village on the opposite bank and continuing up the valley for  $1\frac{1}{2}$  miles, we passed another village on the same bank, and  $2\frac{1}{2}$  miles further we turned up a stream from the south for  $2\frac{1}{2}$  miles and then ascended a pass by a steep road of  $\frac{1}{2}$  a mile. After a steep descent of  $1\frac{1}{2}$  miles, we proceeded 2 miles along a small stream to its junction with another from the east. About 3 miles up the latter and on its right bank is a large *gom-pa* named Chioti, inhabited by 300 *Dabas* and having some 100 houses about it. The Lama of this *gom-pa* is one of the wealthiest persons in the *Gāba pargana*: some time ago he visited China and brought back a cuckoo clock which is an object of much curiosity among his neighbours. Proceeding a mile down the stream, we arrived at Thiso village, containing 30 houses, where we stopped for the night. Supplies were procurable at all these villages and cultivation was seen in their vicinity. One crop of *ne* and wheat is raised annually.

139. On the 21st, continuing along the stream for  $\frac{1}{2}$  of a mile, we came to Khutho village, containing 20 houses, and  $\frac{1}{2}$  of a mile further to a *gom-pa*, called Thuden, having passed *en route* a village named Lāso containing 8 houses. Thuden Gom-pa is a small monastery, and has only 50 *Dabas*. Observations for latitude and of the boiling point were taken here (lat.  $33^{\circ} 16' 29''$ , height 11,990 feet). This was the first opportunity I had of observing since leaving Yembi in September 1880. We remained here for about two months waiting for our employer, who was an inhabitant of this place, to pay us; he at last gave us some money and a letter for a friend of his at Kegu Gom-pa, asking him to help us on our way to Lhāsa.

140. Leaving the *gom-pa* on the 26th December 1881, we now had to travel on foot. Following the stream we first, after  $\frac{1}{2}$  a mile, passed Lāindha village, containing 50 houses, and half a mile further came to Churtan Kārpo, one of the sacred shrines in the Derge district. It is situated near the junction of the stream with the Di Chu which latter here comes from a bearing of  $332\frac{1}{2}^{\circ}$ : observations of the boiling point were taken here (height 11,440 feet). Opposite the *churtan*, and on the right bank of the river, is a village named Thāndha, containing 40 houses. A mile further we passed the village of Rāngna situated on the left bank of the Di Chu, and little to our left, containing 15 houses. Having crossed the river which was then frozen and 175 paces wide, we came to Dwindha village, containing 50 houses, after  $2\frac{1}{2}$  miles we passed the village of Dhokor on the opposite side of the river, containing 30 houses.  $1\frac{1}{2}$  miles further we reached Jindha village of 30 houses, and  $1\frac{1}{2}$  miles still further, arrived at the left bank of a stream which falls into the river. Opposite the junction is Bari village, containing 10 houses. Proceeding half a mile up the left bank of the stream which comes from the south-west, we passed opposite Denda village, containing 30 houses.  $1\frac{1}{2}$  miles further is a *gom-pa* named Bhonchi, and  $1\frac{1}{2}$  miles beyond that is Thombudha village, containing 20 houses, near the junction of and between a stream from the west and the one running along our route: here we stopped for the night. About a mile to the west of this village is a *gom-pa* named Rākna. To-day's road was stony and through valleys, and all the villages we passed had more or less cultivation about them.

141. On the 27th, after proceeding  $2\frac{1}{2}$  miles up the stream, we crossed another stream from the south-east, and  $3\frac{1}{2}$  miles further, reached the top of a pass by a steep ascent. Descending for  $1\frac{1}{2}$  miles to a stream coming from the west, we ascended gently for a mile the opposite ridge, and after a stiff descent of  $1\frac{1}{2}$  miles and proceeding  $1\frac{1}{2}$  miles along a stream, we passed Kegu Gom-pa, a little to our left, inhabited by 300 *Dabas*, and a quarter of a mile further reached Kegudo village, containing about 200 houses, where we halted. To-day's road was rough, and we passed *en route* several nomad tents. Kegudo is a large village, and in it are about 40 shops kept by Chinese and Tibetans; it is a place of trade. The chief articles exported to China are stags' horns, musk-pods and coarse woollen cloth, in exchange for which tea and silk cloth are imported. The stag is hunted during the spring as in that season its horns are young and soft. These horns are highly valued in China on account of their medicinal properties, and a pair of antlers sells there from Rs. 150 to Rs. 200. The letter which our late employer gave us for his friend at Kegu Gom-pa was delivered, and the latter recommended us to a trader going to Ta-chien-lu. As we stopped here for 16 days we found an opportunity for taking observations for latitude and of the boiling point (lat.  $33^{\circ} 0' 58''$ , height 11,800 feet).

142. Leaving on the 12th January 1882, in the service of the trader, we started for Ta-chien-lu, along the route which branching off from the Mora lake, passes by this village. After 200 paces, we crossed a stream, 25 paces broad and  $1\frac{1}{2}$  feet deep, which flowing from the west empties itself into a stream coming from the south-east, which latter now turning to the east falls into the Di Chu. Continuing for  $3\frac{1}{2}$  miles up the left bank of the stream from the south-east, we passed opposite a *gom-pa* named Tangu, situated little below the junction of a

stream from the east, this *gom-pa* is inhabited by 30 *Dabas*. Proceeding  $3\frac{1}{2}$  miles up the same bank we crossed a stream coming from the south-west. The general direction of our route from Baron Tsaidam to this place was south, but it now turned to the south-east. 3 miles further, we crossed the stream, 30 paces broad and  $1\frac{1}{2}$  feet deep, and thence observed at a distance of  $6\frac{1}{2}$  miles and bearing  $169^\circ$ , a snowy peak on a long range running east and west. Continuing up the right bank for  $3\frac{1}{2}$  miles we crossed a stream from the north, and three-fourths of a mile further on arrived at Benchin Gom-pa, inhabited by 150 *Dabas*. Near the *gom-pa* were about 80 houses and some 40 tents appertaining to the nomads: here we stopped for the night.

143. On the 13th, proceeding  $1\frac{1}{2}$  miles up the stream, we arrived opposite the junction of another stream with this stream, and three-quarters of a mile onward, we passed a *gom-pa* to the left of our route.  $3\frac{1}{2}$  miles further, a stream from the north falls into the stream we were following, and 4 miles onward a low pass was ascended. From Kegudo to this place our route was good and led through a broad valley, but it now entered a narrow defile. Descending gently for a quarter of a mile, we reached a stream issuing from the pass, and following it for  $3\frac{1}{2}$  miles, passed opposite a stream coming from the east.  $1\frac{1}{2}$  miles onward, another stream from the south-west falls into the one running along our route;  $1\frac{1}{2}$  miles further is Khansar village, containing 25 houses, where we stopped for the night. From Hadho in the Baron district to the pass just mentioned no trees or bushes were seen; but onward, the *padam* (a kind of fir), *chängma* (a kind of willow), *shün* (a tree not recognised) and wild rose-bushes were met with.

144. Next day proceeding  $1\frac{1}{2}$  miles down the valley we crossed a stream from the south-west, near the junction of which were some fields and a hamlet of two houses.  $1\frac{1}{2}$  miles further on, another stream from the west was crossed, opposite to which and on the left bank of the main stream is Shiongo Gom-pa, inhabited by 30 *Dabas*. Half a mile lower down and opposite a village containing 30 houses, this stream falls into the Di Chu now flowing from the north-west. The river flows here in a narrow valley and was frozen here and there so that it could be crossed. Marching 5 miles along the right bank of the river we arrived at Siti village, containing 10 houses, having passed  $2\frac{1}{2}$  miles before reaching it, a small hamlet of 4 houses. 2 miles lower down is a small *gom-pa* on the left bank; and  $2\frac{1}{2}$  miles further, the route passes by Donthok Gom-pa built near the extremity of a spur to the right, and inhabited by 50 *Dabas*. Proceeding a quarter of a mile further, we crossed a stream falling into the Di Chu, and  $2\frac{1}{2}$  miles further still, stopped at Dogung village, containing 10 houses, where supplies, firewood and grass were procurable.

145. On the 15th January 1882, we resumed our march and after 500 paces, crossed a stream which flowing from the south joins the Di Chu. The path which is at first rather steep and ill-defined, passed Shāo hamlet (2 houses), a stream from the right, and Dondi hamlet (5 houses) and brought us to Dwinthang Gom-pa on the left bank of the river, distant  $7\frac{1}{2}$  miles from the last stage. A little above the *gom-pa* we crossed the river on the ice: it was about 180 paces wide. The *gom-pa* is said to contain 100 *Dabas* and is surrounded by 100 houses. Continuing for  $3\frac{1}{2}$  miles along the left bank of the river and passing *en route* two hamlets, we arrived at a *dukha* (ferry), where the river is crossed by boats during the summer, opposite to a few huts on the right bank mostly inhabited by boatmen. Here a stream from the south-west joins the right bank of the river.  $5\frac{1}{2}$  miles further on is Sila village, of 30 houses, near the junction of a stream from the north-east, where we halted for the night. Supplies, firewood and grass were abundant. Observations of the boiling point were taken here (height 10,390 feet).

146. On the 16th, proceeding three-quarters of a mile along the left bank of the river, we passed opposite a stream which falls into the Di Chu from the south, and half a mile further reached Rārang village of 20 houses. Opposite this village and on the right bank of the river is Dhingo Gom-pa having 30 *Dabas*; and  $3\frac{1}{2}$  miles onward, is Chiti Gom-pa, containing 35 *Dabas*, situated on the left bank. Passing thence through scattered hamlets for  $6\frac{1}{2}$  miles, we came opposite to Chingo Gom-pa surrounded by 50 houses, and three-quarters of a mile further, arrived at the well-known temple named Dolma Lhakang surrounded by 30 houses, where we put up for the night and where observations of the boiling point were taken (height 10,930 feet). About a quarter of a mile to the north of this temple is Losino village of 30 houses. Various kinds of corn and vegetables are cultivated along the banks of the Di Chu, *viz.*, wheat, *ne* (a kind of barley), pease, *masūr*, (a kind of pulse), *sarson* (a kind of mustard seed), turnip, radish, &c. About 50 miles to the south-east and on the right bank of the Di Chu is the town Derge Gonchen, said to possess a large *gom-pa* and palaces of the Derge Gyalbo (Rāja). Some 15 years ago the inhabitants of the Niārong district, who are the most warlike of the Tibetans, invaded and conquered the town and pulled down several of the palaces. The Rāja is said to have a large printing establishment, the printing being executed by means of engraved wooden blocks; and this establishment contains such for almost all the books now existing in the Tibetan language. To economize space and material the blocks are engraved on both sides.



147. On the 17th, having proceeded  $\frac{1}{2}$  mile along the left bank of the Di Chu, we passed the junction with it, on opposite sides, of two streams, one from the north-east and the other from the south; and  $1\frac{1}{2}$  miles further we crossed a stream from the north-east. Our road now diverged from the Di Chu which here takes a bearing of  $127\frac{1}{4}^{\circ}$ . After a steep ascent of  $1\frac{1}{2}$  miles up the slope of the range to our left, we came to Kāphu Gom-pa where there are 25 *Dabas*, we continued along the slope for  $6\frac{1}{2}$  miles, and passing by the hamlets of Bāga (10 houses) and Rāra (5 houses), crossed a stream flowing down from the north which joins the Di Chu about 3 miles to the south of the road. Continuing along the slope for  $2\frac{1}{2}$  miles, we passed Ngali Gom-pa (30 *Dabas*) and having crossed a spur, descended to a stream, 2 miles from the *gom-pa*, running to the east. Proceeding  $3\frac{1}{2}$  miles along this stream we stopped at Chiri village for the night. This village contains 15 houses and has a hot spring near it. Firewood, grass and other supplies were procurable.

148. On the 18th January 1882, continuing along the stream for 4 miles, which thence flows southwards to the Di Chu, we crossed a spur running to the south, and then followed a stream issuing from it and falling into another stream from the south-east which joins the Di Chu. This river then turns south through a narrow valley, and is said to be very deep.  $1\frac{1}{2}$  miles from the spur we passed Gainjo Gom-pa surrounded by 60 houses, and then proceeding up the stream from the south-east we passed Jongu Gom-pa surrounded by about 50 houses, and a stream coming from the north; we arrived at Dojam, a nomad camp, at the junction of two streams and distant  $9\frac{1}{2}$  miles from the spur. There were no fixed habitations here; but grass and firewood were abundant. We here learnt that we were likely to meet mounted robbers of the Chiāmo-Golok district during our next day's march.

149. On the 19th, proceeding  $7\frac{1}{2}$  miles up the left branch of the stream, we reached a pass by an easy ascent, having crossed *en route* a small stream from the right. Leaving the pass which is on the boundary of the Jokchen *pargana* of the Derge district, we continued for 9 miles along a stream issuing from it which we crossed several times: this stream after receiving the water of three other streams, two from the south and one from the east, turns to the north-east and empties itself into the Ja Chu. We passed several nomad encampments.  $3\frac{1}{2}$  miles further, we crossed a pass by a slight ascent and descending half a mile we crossed a stream which coming from the south and flowing for 2 miles along our route turns to the north.  $3\frac{1}{2}$  miles further is a stream flowing from the south, and  $1\frac{1}{2}$  miles onward is Jokchen Gom-pa on the bank of another stream from the same direction, which has about 200 houses and 100 tents in its vicinity: here we halted. We had a long march to-day as we wished to reach a safe encamping place to escape the robbers of whom we had heard yesterday. The three streams before mentioned as flowing to the north unite with the stream from the Miri pass, the latter empties itself into the Ja Chu. They drain a generally level and open valley covered with rich pasturage which affords sustenance to large herds of yaks, sheep and goats belonging to nomads who are numerous in the valley.

150. On the 20th, we left the *gom-pa* and proceeding three-quarters of a mile crossed a small stream from the south.  $2\frac{1}{2}$  miles further, we reached the stream coming from the Miri pass; marching up it within a somewhat narrow valley for 7 miles we gained that pass by a steep ascent of  $1\frac{1}{2}$  miles. Near the foot of the pass 4 streams from the right and left of our route, joined the one from it and formed the Miri pass stream. This pass forms the boundary between the Jokchen and Yulung *parganas* of the Derge district. Descending abruptly for  $1\frac{1}{2}$  miles and then marching 3 miles we came to a stream which issuing from a small lake (about a mile long and the same in breadth) to our right, flows to the north-east.  $1\frac{1}{2}$  miles onward we forded a small stream which running to the north joins the one from the lake, and  $4\frac{1}{2}$  miles further, we crossed the united stream near its junction with another stream from the south-west. Proceeding down stream for  $1\frac{1}{2}$  miles, we arrived at Yulung, a nomad camp of 50 tents, among which was one house near the junction of a stream from the north. We stopped for the night and found fuel and grass in abundance. To-day we encountered 10 mounted robbers near the Miri pass, but fortunately for us the sudden approach of a Tibetan officer dispersed them. We would have halted near the lake but fearing a surprise we sought the protection of the nomad camp.

151. On the 21st, marching for 3 miles along the left bank of the stream, now bearing the name of the Yulung Chu, we passed opposite a stream which coming from the south-west joins it, and  $5\frac{1}{2}$  miles lower down another stream from the same direction falls into it.  $2\frac{1}{2}$  miles onward a stream comes from the north-east up which, about a mile from the route, is the residence of the Yulung *Pon*, or ruler of the Yulung *pargana*, where 5 or 6 houses and a number of tents were visible. Marching  $3\frac{1}{2}$  miles along the left bank of the stream, we observed a snowy peak, bearing  $140\frac{1}{4}^{\circ}$  and distant  $9\frac{1}{2}$  miles, and  $3\frac{1}{2}$  miles onward crossed the stream, 35 paces wide and 2 feet deep. Following the right bank for  $1\frac{1}{2}$  miles, we crossed a stream coming from the south, and there found some 10 nomad tents, situated in a small plain at the southern extremity of



which was a thick forest containing a species of stunted oak, *deodār*, *bhoj* (a kind of birch), rhododendrons (bearing white flowers) and several kinds of plants and bushes. We halted near the encampment and found plenty of firewood and grass.

152. On the 22nd January 1882, proceeding 5 miles, we crossed two small streams from the south, distant half a mile from each other. Ascending gently for  $2\frac{1}{2}$  miles to the top of a spur opposite to which on the left bank of the river is a village distant  $1\frac{1}{2}$  miles, we reached the boundary between the Derge and Rongbacha or Horko districts. This spur is well clad with forest, and sawyers from Ta-chien-lu were engaged here in turning out timber for the use of the inhabitants of the surrounding places. From the village above mentioned the Yulung Chu stream turns to the north-east, and after a further course of some miles joins the Ja Chu. Continuing for  $1\frac{1}{2}$  miles along this spur, we observed a snowy peak bearing  $162^\circ$ , distant  $3\frac{1}{2}$  miles, and thence followed a stream which flowing 3 miles along our route turns to the east and ultimately falls into the Ja Chu. 600 paces further, a stream from the west crosses the road and joins the above mentioned stream, and 2 miles onward a stream issues and flowing  $3\frac{1}{2}$  miles along our route turns to the north and joins the same stream.  $\frac{2}{3}$  of a mile from this turn, Riphug temple which consists of a small cave adorned with flags, &c., was passed to the left, and a quarter of a mile further we reached Lāgarkhāndo, where a well-known and very rich trader lives. Proceeding  $1\frac{1}{2}$  miles, we passed Durkug village, containing large buildings, situated on the bank of a stream flowing to the north, and  $1\frac{1}{2}$  miles onward crossed a stream, 30 paces wide and two feet deep, which flowing northerly joins the stream mentioned before which falls into the Ja Chu. Continuing our journey for  $1\frac{1}{2}$  miles we reached Daje Gom-pa having 1,000 *Dabas* and surrounded by 300 private houses. This is one of the principal *gom-pas* in Tibet and is adorned with golden cupolas. Two miles onward is a village called Ringo, 40 houses, where we stopped for two days. Observations for latitude and of the boiling point were taken here (lat.  $31^\circ 39' 14''$ , height 10,550 feet). This village is surrounded by extensive cultivation, and to its south lies a long snowy range which runs from Kegudo village eastward along the right of our route and extends to the Tangla range on the west. Houses here are well built, as timber is easily procurable. Grass, firewood and supplies are abundant. The road from Kegudo village to this place was generally good excepting along the Di Chu where we found it rather stony and rugged.

153. On the 25th, we crossed near a small village about a mile from Ringo village the Ja Chu over ice, 120 paces wide. This river rises in the Jachukha district, to the north-west, to which it gives the name: it is crossed by boats in summer. From the left bank we observed a snowy peak at a distance of  $4\frac{1}{2}$  miles, bearing  $209\frac{1}{2}^\circ$ ; marching  $3\frac{1}{2}$  miles along the river through fields and habitations, we saw a stream coming from the south, and joining the river. Half a mile further, we crossed a stream from the north-east, and proceeding thence 800 paces reached a hamlet to our left whence we observed a snowy peak, bearing  $178^\circ$  and distant 6 miles. A mile onward to our left was a *gom-pa* named Bhiar, and three-quarters of a mile further, we passed opposite another *gom-pa* named Nena, close to which a stream from the south joined the river. Still following the Ja Chu for  $3\frac{1}{2}$  miles and passing a hamlet *en route*, we crossed a stream coming from the north, and  $2\frac{1}{2}$  miles further saw a stream from the south falling into the river. Three-quarters of a mile thence we forded a stream from the north, on the left bank of which was a village where we stopped for the night. About half a mile to the north-west of the village and on the right bank of the stream is Kānzego, a large *gom-pa* inhabited by 2,000 *Dabas* and surrounded by 2,500 houses. It is so old and sacred that people of the neighbouring districts in order to confirm their declarations swear by its name. Rongbacha and the districts to the east of it are governed by two Chinese officers who have their head-quarters at Kānzego. From here the Ja Chu takes a south-easterly course; some miles further on it cuts through the southern snowy range, and waters the Niārōng district, the inhabitants of which are very brave and are said to have conquered the neighbouring districts, and to have even baffled the Chinese troops sent against them some 15 years ago: at last the Lhāsa Government won over their chiefs by bribery and thus subdued them.

154. On the 26th, having marched  $2\frac{1}{2}$  miles, passing *en route* a hamlet of 20 houses, we observed two snowy peaks close to each other, bearing  $135\frac{1}{2}^\circ$ ,  $137\frac{1}{2}^\circ$  and distant 14 miles.  $3\frac{1}{2}$  miles further, we crossed a stream (near a hamlet) coming from the north and falling into the Ja Chu. Ascending thence 2 miles and then descending three-quarters of a mile, we crossed another stream coming from the north, which flowing to the south for half a mile joins a stream coming down from a pass ahead. The joint stream flowing to the south for some miles receives a third stream issuing from the southern snowy range and then falls into the Ja Chu. Proceeding half a mile further we reached a small village on the right bank of the stream from the pass where we stopped for the night. We had a short march to-day as we wanted some of our companions who had been detained by their friends at Kānzego to join us.

155. On the 27th January 1882, proceeding up the stream for 3 miles we reached a

pass, the boundary between the Rongbucha and Dau districts, by an easy ascent, and descending thence  $3\frac{1}{4}$  miles we crossed a stream coming from the south.  $1\frac{1}{4}$  miles lower down we passed a *gom-pa* named Jior, and three-quarters of a mile further the hamlet of Klānsar of 10 houses. Still continuing to descend for  $3\frac{1}{4}$  miles and passing two hamlets *en route*, we arrived at the junction of a stream from the north with a stream from the west, close to a village having the residence of an official of the Dau *patti*. Proceeding three-quarters of a mile along the stream, we passed the residence of the Gyalbo (Rāja), surrounded by 30 houses;  $1\frac{1}{4}$  miles further on a stream from the south-west joined the one along the route. Continuing down stream for  $6\frac{1}{2}$  miles and passing *en route* 3 hamlets, we crossed a stream from the south, on the right bank of which is the village named Dwindā containing 25 houses, where we stopped for the night. To-day's path was stony and rugged.

156. On the 28th, still following down stream, after  $1\frac{1}{2}$  miles we crossed a stream coming from the south; thence marching  $7\frac{1}{4}$  miles and crossing *en route* a low spur and passing by two hamlets, we forded a stream from the south-west. Marching on for  $5\frac{1}{2}$  miles, through fields and habitations, we crossed another stream from the south-west. From this place the stream takes a circuitous course round spurs of hills from the south. Proceeding half a mile further, we reached Gori village, where we halted, and where grass, firewood and supplies were procurable. To-day's road was for the most part good.

157. On the 29th, after proceeding  $2\frac{1}{4}$  miles, we crossed a stream from the south.  $1\frac{1}{4}$  miles further we reached a hamlet close to the low pass which forms the boundary between the Dau and Dāngo districts, and about 2 miles onward arrived at the *gom-pa* of Dāngo, inhabited by 2,000 *Dabas* and surrounded by about 1,000 houses. This *gom-pa* is also far famed and is adorned with golden cupolas. Three-quarters of a mile further we crossed a stream flowing to the north, and a little beyond arrived opposite the junction of a large stream from the north with the main stream. Ascending about a mile to a spur, we proceeded along it for  $1\frac{1}{2}$  miles, and thence descending gently for 3 miles arrived at the village of Bathog, containing 15 houses, on the left bank of a small stream from the south which joins the main stream. Proceeding 5 miles along the main stream through fields and cultivation, we crossed a stream from the south-west, and  $2\frac{1}{4}$  miles further forded the stream itself, here 70 paces wide and 3 feet deep, to a village on the left bank. Continuing our journey we passed, after  $1\frac{1}{4}$  miles, opposite a stream from the south-west, and  $2\frac{1}{4}$  miles further arrived at a village of 10 houses where we stopped for the night, and where grass, firewood and supplies were procurable. To-day's road was stony and rugged.

158. The next day, after proceeding a mile down the stream and then up a stiff ascent for three-quarters of a mile, we came to a village on the top of the spur forming the boundary between the Dāngo and Tau districts, and descending thence to a hamlet half a mile distant, we crossed 3 miles further, a large stream coming from the north and joining the main stream. Continuing our journey for 10 miles and passing *en route* 6 hamlets, we reached the village of Yāthok containing 25 houses, situated near a stream from the north, where we halted for the night. All the villages along to-day's route were situated on the left bank of the stream; the opposite bank was covered with forest trees.

159. On the 31st, we left Yāthok village and having crossed a stream arrived at the village of Dathok, 10 houses, distant  $1\frac{1}{4}$  miles.  $2\frac{1}{4}$  miles from Dathok we crossed a stream from the north having passed a hamlet *en route*, and  $2\frac{1}{4}$  miles further forded another stream from the north-east, having passed 2 hamlets on the road between these two streams. Marching  $1\frac{1}{2}$  miles along the left bank of the main stream we passed opposite a stream coming from the south-west, and a quarter of a mile further reached a stream from the north, on the right bank of which, about a quarter of a mile to our left, was a *gom-pa* named Nichong, occupied by about 800 *Dabas*. The stream which we had followed from the Dau *patti* and which was locally called by various names from places watered by it, is here known as Tau Chu: a quarter of a mile below the *gom-pa* it turns to the south-west, and passing through the district of Niārong falls into the Ja Chu, and the united stream lower down is named the Nag Chu.  $4\frac{1}{4}$  miles from the *gom-pa*, having passed 2 hamlets *en route*, we crossed a stream coming from the south-east which flowing to the west joins the Tau Chu. Going up its left bank for  $2\frac{1}{4}$  miles we observed that a stream from the north-east joined it, and 6 miles further, we arrived opposite Giaro village situated on the right bank of the stream. The hill sides from this village onward are covered with thick forest of the same kinds of trees met with near Yulung. To-day we passed a number of hamlets situated on the banks of the stream.

160. On the 1st February 1882, marching up the stream for a mile, we passed a village containing 15 houses, and two miles higher up crossed a stream coming from the south-west.  $2\frac{1}{4}$  miles further we crossed another stream from the same direction, and  $1\frac{1}{4}$  miles beyond reached the foot of a pass, named Minia pass, which has a steep ascent of three-quarters of

a mile. This pass forms the boundary between the Tau and Minia districts and crosses the southern range which had lain along the right of our route and which hence turns to the south. Descending half a mile from the pass, we found a stream which issues from it, and following it through an uninhabited part of the Minia district for  $5\frac{1}{2}$  miles, we arrived near the junction with it of a stream from the north-west. Proceeding 6 miles along the right bank we passed opposite a hamlet, and two miles further reached the village of Khansar (15 houses) where we stopped for the night. The route from Giaro to Khansar passes through heavy forest, and the robbers from the Niārong district generally plunder travellers in the neighbourhood of the pass. About a year ago, it is said, they robbed and murdered a Chinese trader in its vicinity. Some cultivation was seen near Khansar village.

161. The next day after going a quarter of a mile down stream, we crossed to the left bank at a place where it was 15 paces wide and  $1\frac{1}{2}$  feet deep. Continuing along it for  $4\frac{1}{2}$  miles, we passed a small *gom-pa*, occupied by 10 *Dabas*, and  $2\frac{1}{2}$  miles further on, crossed a stream coming from the north, near a hamlet. 3 miles further having passed a hamlet *en route*, we arrived at the junction of the stream along our route with another from the south-east. The joint stream flowing hence to the south-east joins the Nag Chu. Having crossed the stream from the south-east, 15 paces wide and  $1\frac{1}{2}$  feet deep, we marched up its left bank, and passing *en route* 2 small hamlets, forded,  $2\frac{1}{2}$  miles from the junction mentioned before, a stream coming from the south. A mile further on, a stream from the north joined the one along our route; thence passing by 2 hamlets we arrived,  $3\frac{1}{2}$  miles further on, at the junction with it of two streams, one from the south and the other from the north. 3 miles further up the left bank, we crossed to the village of Shao, 15 houses, situated on the right bank, where we stopped for the night. Supplies, firewood and grass are procurable. Cultivation was scanty in the vicinity of the villages on this side of the Minia pass. Each hamlet had near it one or more old, stone built, square towers which were necessary in former times as safeguards against bands of plunderers who then infested the country.

162. On the 3rd, having gone 3 miles, we crossed a stream from the east near a hamlet (5 houses). Half a mile further on, a stream from the south-east joined the one we had followed and thence by a stiff ascent of  $\frac{1}{2}$  of a mile we gained a pass whence we observed two snowy peaks, bearing  $79^\circ$  and  $116^\circ$ , distant  $7\frac{1}{2}$  and  $8\frac{1}{2}$  miles respectively. Descending gently to a stream, distant  $\frac{1}{2}$  a mile, we proceeded along it for  $1\frac{1}{2}$  miles to its junction with another small stream from the north; the joint stream thence turned to the south.  $1\frac{1}{2}$  miles further on, we crossed a stream, 20 paces wide and  $1\frac{1}{2}$  feet deep, from the east, and 704 paces onward we forded a stream from the south-east.  $2\frac{1}{2}$  miles further, we crossed a stream which coming from the south-east joins the above mentioned stream, and  $1\frac{1}{2}$  miles onward reached a pass by an easy ascent. Descending for a mile we arrived at the confluence of three small streams issuing from the pass and proceeding along the united stream for  $2\frac{1}{2}$  miles, we crossed a stream coming from the east. Proceeding  $1\frac{1}{2}$  miles further, along the stream from the pass, we saw a hamlet on the right bank, and thence leaving the stream and turning to our left proceeded for  $1\frac{1}{2}$  miles, and near a small village crossed a stream which flowing to the west joins the stream mentioned before. Crossing a low pass we arrived after  $2\frac{1}{2}$  miles at Tombadu, 10 houses, near the junction of two streams which come from the north-east and east, where we stopped for the night. Our path was over undulating ground, and we passed several nomad tents and a breeding establishment for horses belonging to a Tibetan official. Supplies, firewood and grass were abundant.

163. On the 4th, we crossed a spur about a mile distant, and descending thence for half a mile, we forded a stream coming from the north.  $1\frac{1}{2}$  miles further, we crossed a stream, formed by the junction of two small ones coming from the north and south-east respectively. Proceeding up the south-eastern branch for  $1\frac{1}{2}$  miles a stream coming from the north-east joined it, and  $1\frac{1}{2}$  miles further, we reached a low pass. Descending about half a mile, we forded a stream flowing to the south and one mile further crossed a stream from the east which flowing to the south-west joins the one mentioned before.  $1\frac{1}{2}$  miles further we reached a low pass named Sāma La, and proceeding along an elevated tract for 4 miles, crossed a stream and thence ascended for 700 paces to the Gi pass. This pass also crosses over the snowy range which here divides into two ranges running to our right and left, and from it a path branches off to Lhāsa by way of Li-tang and Ba-tang. Descending along a stream for 3 miles we crossed another, which coming from the west joins the one flowing along our route, and  $2\frac{1}{2}$  miles further, we forded a stream from the east joining the main stream. Continuing our progress  $3\frac{1}{2}$  miles we arrived at Chithog Giachug (a posting stage where a relay of horses is kept) opposite to a stream coming from the west. Here are some 25 houses where travellers can lodge and obtain food on payment, and a stage-house for Chinese officers. These rest-houses are very comfortable and well furnished and their managers are ready to supply anything on demand; but as all articles have to be brought from Ta-chien-lu they are dear. To-day snow fell, and the path from the Gi pass was rugged and stony and lay through a narrow valley. We found no village or hamlet

between Tombadu and Sāma La, but saw some nomad tents here and there; from the latter place even these were not met with.

164. Leaving Chithog on the 5th February 1882, we crossed after three-quarters of a mile a stream from the north-east and proceeding 3 miles further arrived opposite the junction of a large stream from the south with the one along our route, whence we observed 5 snowy peaks, bearing  $68^{\circ}$ ,  $79^{\circ}$ ,  $86\frac{1}{2}^{\circ}$ ,  $107\frac{1}{2}^{\circ}$  and  $116\frac{1}{2}^{\circ}$ , distant  $5\frac{1}{2}$ ,  $5\frac{1}{2}$ ,  $6\frac{1}{2}$ , 7 and  $7\frac{1}{2}$  miles respectively.  $4\frac{1}{2}$  miles further we crossed the main stream by a bridge 15 paces wide, and proceeding  $\frac{1}{2}$  of a mile further, we arrived at the gate of Ta-chien-lu city.

165. Ta-chien-lu is a small city situated in a very narrow valley resembling the English letter T in form, enclosed on all sides by snowy mountains which rise in precipices of stupendous height. It contains two *bāzārs*, extending north and south for about  $\frac{1}{2}$  of a mile along the banks of the stream, each of which consists of a row of shops on either side of a paved roadway about 15 feet wide. At the end of these two streets a large stream from the west joins the one flowing through the city and the joint stream then flows to the east. The two streets near their termination, extend some way up and down the right bank of the stream from the west. There are four gates, one at each end of the two *bāzārs*, with doors made of thick boards; and the stream is bridged over in a number of places with timber to facilitate communication between the *bāzārs*. The houses are built of stone and timber and are generally high and double-storied. There are four *gom-pas* at the four corners of the city. The city is governed by a Chinese officer entitled *Thain* (literally "sky" and therefore may be taken to mean highest officer), assisted by several inferior officers. A Tibetan officer called *Chiakla* also resides here and has a subordinate jurisdiction over the original inhabitants of Ta-chien-lu. It is a market chiefly for tea which is brought by coolies from a distance of some 20 days' journey, and is hence carried by beasts of burden to various places in Tibet and even to Kashmīr itself. When moist it is shaped into bricks\*, each weighing about 5 lbs., and costing from 6 annas to 3 rupees per brick, according to the quality of the tea. In our journey from Kegudo to Ta-chien-lu, we met several traders returning to their homes with tea estimated to aggregate not less than 300,000 lbs.

166. The climate of the Ta-chien-lu valley in winter is very severe owing to a continuous fall of snow for weeks, while in the hot weather it is comparatively warm from the circumstance of its being surrounded by high mountains. Chinese and Tibetan traders are very numerous, being about equal in number. The language and religion of the native inhabitants of the city resemble those of the Tibetans, but their social and other customs are like those of the Chinese.

167. With the exception of small gardens for raising ordinary vegetables, no cultivation is carried on in the Ta-chien-lu valley. Corn and different kinds of vegetables and fruits are brought from some distance eastwards, where the soil is better suited for culture. Some small bushes alone grow on the hill sides and a few stunted trees have been planted here and there in the vicinity of the houses. Timber and firewood are brought down the large stream from the south, which joins the main stream about  $4\frac{1}{2}$  miles before reaching the city. The streams abound with fish which are caught by angling. The same currency and weights as used at Saitu obtain here, but besides them the Indian rupee is also current.

168. Having heard that two Jesuit Fathers lived outside the city, close to the northern and southern gates, I determined to visit them in order to enquire about the safest and surest route to India, and also to try to obtain through them means to prosecute my journey. One day I met one of them who received me very kindly, but as in the course of conversation he did not raise the question of my means I did not think it advisable to trouble him. He however presented me with six rupees, and gave me an introductory letter to his brethren at Ba-tang and Darjeeling, and advised me to return by way of Tibet in preference to that by China, as the former, he said, would take only 40 days to reach India and furthermore required no passport which would be necessary for the latter. Returning to my quarters I glanced at the Father's letter and found that he and I disagreed in our dates, for what he had put down as the 11th I made out to be the 12th February: unfortunately I had no opportunity of seeing him again. We remained at Ta-chien-lu 11 days during which we were unable to take observations for latitude owing to the cloudy weather and continuous fall of snow, but we took boiling point observations (height 8,310 feet).

169. On the 16th February 1882, we left Ta-chien-lu and retracing our steps for  $2\frac{1}{2}$  miles, took boiling point and latitude observations, the latter of which were however doubtful, as clouds were passing over the meridian at the time: (height 8,930 feet). At nightfall we arrived at Chithog Giachug where we halted.

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\* These bricks are known in Western Tibet and Kashmīr by the name of *dāmu*; the price of a *dāmu* of tea in Leh varied some 20 years ago from 5 to 8 rupees.

170. The next day we reached the Gi pass, where observations of the boiling point were taken (height 14,690 feet), and thence we took the Ba tang route along a stream which runs to the west, and after 2½ miles arrived at Chachukha Giachug, where there were two houses and a rest-house at which we stopped for the night.

171. On the 18th, having proceeded 2 miles, we saw a stream which coming from the south-east joins the one along our route, and three-quarters of a mile further, reached Thicho (Ti-su) village of 15 houses. Marching 2½ miles onward, we crossed to the left bank of the stream near a hamlet, and three-quarters of a mile further, passed opposite its junction with the one from the Sāma La (pass). Continuing along the left bank for 4½ miles, we arrived at Ānya Giachug, which has 30 houses and a stage-house. Following down the same stream and passing the junctions with it of four others, of which the first comes from the east and the others from the north, at distances of 2½, 3, 5 and 5½ miles respectively, we reached Thondo Churtan, also called Hāche, surrounded by eight houses, situated opposite the last junction. To-day we passed several hamlets with cultivation about them along both sides of the stream (now become a small river) and halted near the *churtan*. The following morning was the new year's day of the Tibetan year, and in keeping with the custom of the country we gave ourselves a holiday.

172. On the 20th, we resumed our march and after proceeding along the left bank for 2 miles were informed that the route which we had adopted was wrong. We therefore crossed the stream, 35 paces wide and 2 feet deep, and marching back half a mile up its right bank reached its junction with another stream from the north-west. Going a quarter of a mile up the right bank of the second stream, we crossed to the left bank and continuing along it for 4½ miles we re-crossed it by a wooden bridge, 25 paces long; the stream was estimated to be 1½ feet deep. A quarter of a mile further, a stream from the west joined it, and 2½ miles onward we reached Golokthok Giachug, having a stage house and 20 houses, opposite to the junction of a stream from the north-east with the main stream. After a quarter of a mile we passed the village of Golokthok, and proceeding 5½ miles up the stream, we arrived at an encamping ground, where we halted. To-day we passed many hamlets with cultivation around them and found the inhabitants continuing the festivities of the new year's day. The encamping ground was surrounded by forest. The path was good; grass and firewood were abundant.

173. On the 21st, by a stiff ascent of 2½ miles up the stream, we reached a pass; and descending gently for three-quarters of a mile we crossed a stream which flows to the south past the *gom-pa* of Kashi, 30 houses, situated on its left bank about a mile away. After a steep ascent of a mile from the stream, we gained the Kashi La (pass), where observations of the boiling point were taken (height 14,710 feet). Descending about 2½ miles to a stream coming from a bearing of 102½°, we followed it for 1½ miles to its junction with a stream from the south. Proceeding down the latter for ½ a mile, another from the north joined it and 1½ miles further, we passed Urong Dongu Giachug, having 15 houses and a stage-house. Half a mile onward, two streams coming from the north and south respectively joined that along the route and 3 miles lower down a stream from the south emptied itself into the same. Three-quarters of a mile further we crossed to the left bank and stopped at the hamlet of Zi-ra (3 houses). To-day's road passed through a forest, and there were no hamlets or cultivation along it.

174. On the 22nd February 1882, after proceeding three-quarters of a mile we passed opposite the junction of a stream from the east, and half a mile further saw on the right bank a hamlet named Urongshi (10 houses), the residence of the chief of the Urongshi district, which latter extends from the Kashi La (pass) on the east to the Nagchukha village on the west. Continuing for 4½ miles along the left bank, we arrived at Kharingbo Giachug, 15 houses and a stage-house, situated near a stream from the south, and 3½ miles further, crossed to the right of the stream along our route. About a mile thence we crossed a stream from the north by a wooden bridge, and along the next 5½ miles having crossed the main stream three times by wooden bridges, we reached Nagchukha village. About half a mile before reaching the village the depth of the stream was found to be 2½ feet and the width about 25 paces.

175. Nagchukha village (properly *bāzār*) is situated on the banks of the Nag Chu river, and consists of some 40 shops scattered here and there, and surrounded by high mountains covered with grass and thick forest trees. The forest is full of wild animals among which a species of stag with a thick, flat, long tail is remarkable. The inhabitants are very fond of breeding hogs and hunting-dogs: the former are of two kinds, the Chinese or broad-eared breed and the common kind found in India. Two crops are annually raised here; one consists of barley and wheat, and the other comprises millet, *dau*, turnips and other edible roots.

176. To cross the river previous sanction of the headman of the village is required. We, therefore, went to him to obtain his permission, but as soon as he heard our request he suspected us to be thieves, as he said that every one in the country was celebrating the new year

festival, and that no one but thieves cared to travel. He ordered us to stay there four days, during which time he would get information from the ruler of the city of Ta-chien-lu, whether any theft had lately been committed in the city. After four days we were set at liberty, and having paid two annas to the keeper of the bridge, we crossed the river which is about 100 paces wide. This river as mentioned before is formed by the junction of the Ja Chu and Tau Chu, and flowing to the south it is said to fall into the Di Chu which flows through the Chinese Empire. Observations for latitude and of the boiling point were taken at Nagchukha village (lat.  $30^{\circ} 2' 13''$ , height 8,410 feet).

177. Leaving the village on the 28th, and crossing the river as stated above, we marched northwards along its right bank for half a mile, and thence turned up a stream from the west. Crossing this stream, 15 paces wide and  $1\frac{1}{2}$  feet deep, after a quarter of a mile, and continuing our progress for  $1\frac{1}{2}$  miles, we crossed a stream which falls into it from the left. Proceeding 6 miles up the latter we reached Margen Dongu Giachug, 5 houses and a stage-house, where we stopped for the night. With the exception of a hamlet on the right bank of the river, no habitation was seen along to-day's route. Supplies, grass and firewood were procurable here.

178. On the 1st March 1882, continuing up the stream and proceeding  $4\frac{1}{2}$  miles, we reached the junction with it of a stream from the west,  $1\frac{1}{2}$  miles further we crossed a pass by a steep ascent, and descending three-fourths of a mile arrived at a small *giachug*, consisting of 3 houses. Ascending  $1\frac{1}{2}$  miles we reached another pass by a steep ascent and continuing our journey down it for  $3\frac{1}{2}$  miles, arrived at a *giachug*, 5 houses and a stage-house. Marching  $1\frac{1}{2}$  miles further we passed the *gom-pa* of Golok containing 25 houses, about a mile to the south of our route; and three-quarters of a mile onward reached the junction of a small stream from the north with a larger one from the north-west which flows to the south-east. Proceeding 2 miles up the latter stream and having crossed where it was 25 paces wide and  $1\frac{1}{2}$  feet deep, to the right bank, we arrived at Golokthok Giachug, which has a stage-house and 15 houses, where we passed the night. To-day's road was rugged, stony and undulating, and from the pass last mentioned, lay in the Li-tang district. Cultivation was found here; grass, firewood and supplies were abundant. Smallpox was prevalent in this vicinity and to prevent its spreading, a kind of snuff was administered by Chinese physicians. This snuff has the same effect as vaccination, as its use brings out a few pimples here and there over the body, accompanied by a slight fever: these pimples dry up in time and the dried up matter which falls from them is used in preparing the antidote mentioned above.

179. On the 2nd March 1882, proceeding 4 miles, we reached the top of a spur by a slight ascent. Marching  $1\frac{1}{2}$  miles along a stream which issues from the spur, we arrived at a small *giachug* where a stream from the east falls into the one along our route.  $1\frac{1}{2}$  miles further we crossed where it was 15 paces wide and  $1\frac{1}{2}$  feet deep, to the right bank and proceeding a quarter of a mile thence passed over another stream from the west. These streams unite a little to the left of the route and thence flow to the south. Marching  $1\frac{1}{2}$  miles up the latter stream, we arrived at Tāmārathong Giachug which has a stage-house, seven houses and 10 tents belonging to nomads, and is situated at the junction of three streams coming from the north-east, west and south-west respectively. We stopped here for the night. Our route to-day was good: it passed through a forest, and we met with no cultivation. Supplies, grass and firewood were procurable here.

180. On the 3rd, we proceeded  $3\frac{1}{2}$  miles up the stream from the south-west and reached a pass by a slight ascent, where there is a small *giachug* consisting of a single house. Descending  $3\frac{1}{2}$  miles we crossed a stream which issuing from the northern range flows to the south, and one mile further, arrived at another small *giachug*, where there was a house and 10 nomad tents. Ascending  $1\frac{1}{2}$  miles at a steep gradient we gained the top of a pass, and descending thence for a mile we proceeded 4 miles along a stream which issues from the pass, and reached Hapchukha (Ho-chu-ka) Giachug, where there are 10 houses and a stage-house; here we halted. No hamlets or cultivation but scattered tents of nomads were seen along the route. Supplies, grass and firewood were procurable.

181. The next day proceeding a quarter of a mile along the stream, we forded it to the right bank. This stream flowing a little to the south-west falls into a stream, which coming from the north-west flows to the south. Going up the latter for  $\frac{1}{2}$  a mile, we crossed a stream falling into it from the north, and  $5\frac{1}{2}$  miles further we passed over to the right bank; it was here 30 paces wide and  $2\frac{1}{2}$  feet deep. Here a stream from the west joined it and near the junction is a small *giachug* of one house. From Hapchukha to this place we passed about 100 tents of nomads, and were told that a little to the north of this junction, washing for gold was carried on, and that the gold found there was very fine in color and quality. Proceeding  $3\frac{1}{2}$  miles further up the stream from the west, we crossed a pass by a slight ascent and marching for  $5\frac{1}{2}$  miles over undulating ground, along the base of spurs from the range to the right, arrived at Li-tang, a small city containing about 2,500 houses.

182. Li-tang, one of the richest towns in Tibet, is situated to the north of a plain and at the end of a spur from the northern range. This plain is watered by a stream named Li Chu (Li-tang river) flowing to the south-east. The plain is covered with grass and contains several springs of fresh water. Its greatest length is about 15 miles, and the greatest breadth about 8 miles, and is peopled by a large number of nomads. There is no cultivation, and corn is brought from a distance of about three days' journey to the south; while rice and *gur* (a coarse kind of sugar) are brought from Yūna (Yünnan), a large tract of country belonging to China and distant some 300 miles to the S.E.

183. Here as in Lhāsa, the popular festival of *Chionga Chiopa* is celebrated during the first month of the year. This month is called *Molam Chemo*, or the month of asking blessings, owing to a belief that favors asked for in it are sooner granted by the gods than those sought at any other time. A large earthen figure, triangular in shape, called *Chiopa*, is made and painted with various colours. The figure with a number of smaller ones similar in construction and arranged around it, is placed in the *verandah* of the *gom-pa*: this *gom-pa* is said to be inhabited by 2,500 *Dabas*. A fair commences on the 16th day of the new year, i.e., the day of the full moon (in March), and lasts two days, during which a large gathering of the inhabitants of the neighbourhood takes place. The town has a long *bāzār* said to contain about 100 shops kept by Chinese and Tibetans. Observations of the boiling point were taken at this place (height 13,400 feet). A road branches off from here to Derge Gonchen.

184. On the 7th March 1882,  $3\frac{1}{2}$  miles from Li-tang, we crossed a stream which flows to the south; on its right bank is a hot water spring which has a kind of saline incrustation about it. Half a mile to the north of the spring is a *Rito* (a place of retirement for religious contemplation) with some out-houses for attendants, where the Lama of Li-tang resides.  $2\frac{1}{2}$  miles further we crossed the Li Chu stream, about 3 feet deep, by a wooden bridge 75 paces long, to a small *giachug* on its right bank. Proceeding  $7\frac{1}{2}$  miles up a stream from the south-west, we arrived at Jiambothok Giachug, where there are four houses and a stage-house: here we halted. Supplies, firewood and grass were procurable. No hamlets or cultivation were met with along the route.

185. Next day, a mile from the *giachug*, we crossed the stream, and  $3\frac{1}{2}$  miles further up, reached the Gāra La (pass), where observations of the boiling point were taken (height 15,400 feet). Descending  $1\frac{1}{2}$  miles to a small lake, we followed a stream issuing from it for 3 miles and passed another small lake from which also a small stream emanates and joins the one along our route, close to a small *giachug*. Proceeding  $2\frac{1}{2}$  miles we observed three snowy peaks bearing  $292\frac{1}{2}^{\circ}$ ,  $306\frac{1}{2}^{\circ}$  and  $275\frac{1}{2}^{\circ}$ , distant 11, 11 $\frac{1}{2}$  and 15 miles respectively, and a mile further on crossed a stream which coming from the south joins the one along our route, and then flows to the north. Half a mile further we reached a spur by an easy ascent, and descending thence along a stream for  $3\frac{1}{2}$  miles arrived at Gāralārchā Giachug, where there was a stage-house, three houses and some nomad tents: the *giachug* is situated on the left bank of the stream, a little below its junction with another from the south. We remained here for the night, and found firewood and grass in abundance: supplies were procurable. The road was stony and without hamlets or cultivation along it.

186. On the 9th, following the stream for 2 miles, we crossed another stream coming from the north, and  $1\frac{1}{2}$  miles further, forded another from the south-west. Continuing our progress for a mile we reached the point where the stream along our route joins the large one, which issuing from the Gāra La (pass) had turned northwards to wind round the bases of spurs. Marching  $1\frac{1}{2}$  miles down this stream 35 paces wide and 2 $\frac{1}{2}$  feet deep, we crossed it and arrived at Rāno village of 10 houses, where a chief resides. From this place the stream flows to the south; the route ascends for 2 miles up a stream to a pass to the north-west, and descending  $1\frac{1}{2}$  miles crosses a stream, 30 paces wide and 2 feet deep, flowing to the south. Proceeding a mile further, we reached Māne Kingbo, a long wall extending a mile and faced with thin, rectangular, smooth stone slabs, on which sacred formulæ and religious precepts are engraved. Continuing our journey for  $3\frac{1}{2}$  miles along an undulating path, we crossed a small stream which coming from the north and flowing for half a mile to the south joins a stream, 40 paces broad and 3 feet deep, from the west. A little to the east of this junction is a hamlet which contains 10 houses. Proceeding  $3\frac{1}{2}$  miles up the left bank of the stream, we arrived at Nyenda Giachug having a stage-house and 10 houses. 3 miles distant and bearing  $317\frac{1}{2}^{\circ}$  is Gombone, a place of pilgrimage, at the foot of the mountains. We stopped at Nyenda Giachug for the night. We passed a few hamlets with some cultivation near them and found a number of nomad tents near Nyenda.

187. On the 10th, having crossed a stream flowing down from Gombone, we followed up the left bank of the main stream for  $10\frac{1}{2}$  miles, within which distance two streams from the south and three from the north joined it at  $4\frac{1}{2}$ ,  $5\frac{1}{2}$ ,  $6\frac{1}{2}$ ,  $7\frac{1}{2}$  and  $10\frac{1}{2}$  miles respectively. We here observed a high snowy peak, bearing  $292\frac{1}{2}^{\circ}$  and distant  $6\frac{1}{2}$  miles: and continuing our journey for



1½ miles, we crossed a stream from the north, and 1½ miles further, passed over to the right bank of the stream; about half a mile further we forded a stream from the south-west, and arrived at Rathi Giachug, having a stage-house and 5 houses. Grass and firewood were abundant. The path was good, and we passed through a forest of *padam* trees. There were many nomad tents scattered along the route.

188. On the 11th the route diverged from the stream, and after a gentle ascent of 3½ miles crossed a stream which coming from the west, joins the stream we had forded near Rathi. Continuing the ascent for 2½ miles further, we reached the Rathi pass, the boundary between the Li-tang and Ba-tang districts, where observations of the boiling point were taken (height 15,340 feet). A stream issues from the pass, which flowing down to the west for 2 miles joins a larger stream. Descending 3 miles from the pass to a stream, we proceeded along it for 1½ miles and arrived at the left bank of the larger stream which coming from the north flows to the south. Going up the left bank of this for 2½ miles, we forded a stream from the east, and 2½ miles onward crossed the stream, 25 paces wide and 2 feet deep, to the right bank. A mile further we reached Tāshu Giachug, having a stage-house and 15 houses, on the bank of a stream which coming from the north-west joins the main stream. The path was rugged and stony: no cultivation was met with, but nomad tents were pitched along the stream. Grass and firewood were abundant.

189. The next day proceeding 6½ miles up the stream which comes from the north-west we reached a pass by a steep ascent. We passed *en route* two tributaries of this stream, one coming from the south-west and the other from the north. Descending 1½ miles from the pass we found a small lake to the left of our path, whence a stream emanated and flowed along our route. Continuing our journey for 1½ miles, we crossed a stream from the north-east and 3 miles further, passed another from the south. Three-quarters of a mile onward, we reached Pang-tha-mo Giachug, having a stage-house and 5 houses, situated in the midst of a thick forest. The path was rugged, stony and undulating.

190. On the 13th March 1882, after proceeding half a mile we crossed a stream which coming from the north joined the one along our route. 6 miles further brought us to a small hamlet with some cultivation near it, and 5½ miles beyond, to a hot spring, where five tanks with high curtain and partition walls are built, and around which were a number of tents belonging to persons who had come to bathe; the bathing is continued for at least a week. Proceeding 1½ miles further we reached Chioti Gom-pa, in Ba-tang, where we rested for three nights.

191. This *gom-pa* lies near the junction of the stream along our route with another from the north. This stream a little above the junction is crossed by a wooden bridge, and is about 35 paces wide and 3½ feet deep. The *gom-pa*, which is protected by strong, high curtain walls, is about half a mile in circumference and is inhabited by about 1,000 *Dabas*. The inhabitants of the Saingan *patti*, in the Ba-tang district, who live along the banks of the Di Chu, about a day's journey above the village of Ba-tang, are said to be very turbulent, having on several occasions robbed travellers.

192. Ba-tang is a considerable village or rather a small town in a valley enclosed by hills, and is situated for the most part on a level strip of ground on the right bank of the stream near its junction with the main stream. There are about 2,000 houses including 50 shops. On the left bank of the stream is a house belonging to a Jesuit Father. Two crops are generally raised here as in Nagehukha. Observations for latitude and of the boiling point were taken here (lat. 30° 0' 30", height 8,150 feet). The general direction of our route from Ta-chien-lu to Ba-tang was westerly.

193. On the 16th, proceeding 4½ miles along the left bank of the stream and passing a *gom-pa* and three villages *en route*, we crossed a stream coming from the south-east. Ascending for a mile to the top of a spur by an easy gradient, we observed that about 2 miles to the north the stream we had followed and another from the north-west joined the Di Chu which here flowed down from the north. Proceeding 4 miles along the left bank of the river, we crossed a stream coming from a bearing of 147½°, and 1½ miles further, another from 142½°. Continuing our journey for 7½ miles we reached the ferry and village of Dubāna, where there are about 30 houses and a stage-house; here we stopped for the night. The path was rugged, stony and undulating; for the first 11 miles there were a number of hamlets. Observations for boiling point were taken here (height 7,700 feet). There was a scarcity of grass, but firewood was abundant.

194. The next day we were detained for some hours as the ferry-boats were not available. At 10 A. M. we crossed the Di Chu, here about 300 paces wide and having a rapid current, to a hamlet of 10 houses on the right bank, and proceeding 1½ miles down the river we crossed a



stream coming from the west. Still keeping to the right bank of the Di Chu for  $7\frac{1}{2}$  miles, we reached a hamlet near the junction of a stream from the south. The river now turned south by east, and the route leaving it followed up the stream for  $1\frac{1}{2}$  miles to a hamlet containing 10 houses, where we halted. Firewood and grass were abundant. The path was rugged, stony and undulating.

195. On the 18th March 1882, proceeding  $5\frac{1}{2}$  miles up the stream through a populated country, we reached a pass by a slight ascent. Descending half a mile we arrived at Konzukha Giachug having 15 houses and a stage-house and situated near the boundary between the Ba-tang and Mākham districts. Continuing to descend for  $2\frac{1}{2}$  miles through a thick forest, we reached a stream, 25 paces wide and 2 feet deep, flowing from the south; and marching up its left bank for 4 miles arrived at a village where we stopped for the night. Supplies, grass and firewood were procurable.

196. On the 19th, we proceeded  $5\frac{1}{2}$  miles up the stream along a level path and reached a small *giachug*. Continuing our journey for  $2\frac{1}{2}$  miles we crossed a spur by a slight ascent and descending thence a mile, forded a stream which comes from the south. Thence we reached another spur by a steep ascent of a quarter of a mile; and descending  $1\frac{1}{2}$  miles, arrived at a *lhakang* (temple) on the left bank of a stream from the north.  $1\frac{1}{2}$  miles further, this stream joined another flowing to the south, near a hamlet of 10 houses, and half a mile up this second stream Lhamdun Giachug, having a stage-house and 20 houses, was reached: near this place is a temple dedicated to *Namba Nācho*; a route branches off hence to Chiäkta Chäka, where salt is found. To the south-west of Chiäkta Chäka is a snowy range named Khaharpo culminating in some peaks held sacred which pilgrims circumambulate by way of adoration. We stopped at this village for two nights on account of a fall of snow.

197. On the 21st, we resumed our journey and proceeding  $1\frac{1}{2}$  miles up the stream, crossed it to its right bank; it is here 20 paces wide and  $1\frac{1}{2}$  feet deep. Continuing our journey for  $3\frac{1}{2}$  miles up the stream, through an inhabited part of the country, we crossed a pass by a slight ascent. Descending  $1\frac{1}{2}$  miles, we observed two snowy peaks on the Khaharpo range, bearing  $211^\circ$  and  $221\frac{1}{2}^\circ$ , distant  $20\frac{1}{2}$  and  $19\frac{1}{2}$  miles respectively, and continuing the descent for  $1\frac{1}{2}$  miles, we crossed a stream, 20 paces wide and  $1\frac{1}{2}$  feet deep, coming from the north-east, near its junction with another from the north-west and a mile to the south of a *giachug*. Marching  $5\frac{1}{2}$  miles up the north-western stream, we crossed a pass by an easy ascent, and descending  $3\frac{1}{2}$  miles along a stream issuing from it, arrived at Phula village, having a stage-house and 20 other houses, near the junction of the stream with another from the north-west. We stopped here for the night.

198. Proceeding the next day for a mile up the stream, 35 paces wide and 2 feet deep, we crossed to the right bank, and marching  $12\frac{1}{2}$  miles up that bank arrived at Gartok or Mākham. This is a large village, containing about 700 houses with a large *gom-pa* and a building for the residence of the two Jongpons, and has some cultivation near it. We remained here for two nights and took latitude and boiling point observations (lat.  $29^\circ 41' 7''$ , height 11,920 feet). Gartok is under the Government of Lhāsa. The general direction of our route from Lhamdun to this village was north-west.

199. On the 24th, proceeding a mile up the stream, we reached the junction with it of a stream from the north-west.  $2\frac{1}{2}$  miles up the latter stream, we found that another from the south-west joined it. As we intended to enter India through Assam we here left the Lhāsa route\* which goes up the stream from the north-west, and followed a footpath up the stream from the south-west towards Zayul, a district about 100 miles N.E. of Sadiya. Proceeding  $2\frac{1}{2}$  miles, we reached a pass by a slight ascent and travelling along the ridge for  $1\frac{1}{2}$  miles descended gently for  $5\frac{1}{2}$  miles along a stream which flows in a narrow valley, to the village of Lāo, containing 20 houses, situated opposite to the junction of a small stream from the east with the one along our route. We stopped here for the night.

200. On the 25th, marching down the narrow valley for 8 miles, we arrived at the junction of the stream with the river called Chiamdo Chu, which comes from the north-west. The stream in this distance received three small tributaries—two from north-west and one from east. The valley is well cultivated and has a number of houses scattered about it. A quarter of a mile down the river a stream from the east joined it, and  $1\frac{1}{2}$  miles further on we arrived at Samba Dukha (ferry), where are five houses belonging to the men in charge of the bridge. Boiling point observations were taken here (height 9,450 feet). The arrangement for crossing consists of a thick leather rope stretched very tight from an elevated point on one bank, to a

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\* This route proceeds north-westerly for about 180 miles, *via* Dāyāg, till it reaches Chiamdo on the left bank of the Chiamdo Chu: thence it turns south-westerly for about 110 miles (crossing *en route* the Giana Nu Chu) and joins the route we eventually adopted near Lho Dzong.

lower level on the opposite bank. The rope is secured round stout poles half buried in the ground, and is strong enough to bear the weight of men and animals. The method of crossing is very simple. A rope is carefully fastened to a niche at one end of a semi-circular (bent) piece of wood; the latter is brought on to the thick leather rope, and the former, after being securely attached round the body, is fastened to the other end of the bent wood which is then made to slide down, bearing the passenger to the opposite bank in a minute. For re-crossing the river, another rope is similarly stretched in a suitable locality close by. The length of the rope-bridge was estimated to be about 130 paces. Crossing the bridge and proceeding  $3\frac{1}{2}$  miles along the right bank of the river, we arrived at the junction of a stream from the west. The river turns hence to the south-east, and is said to pass by Riu Chiako, a place of pilgrimage in Burma. Going 2 miles up the stream we reached Jio village, containing about 15 houses, where we stopped for the night. The path was narrow, rugged and stony.

201. On the 26th March 1882, ascending 2 miles we gained the spur by a steep ascent, on top of which to the left of the route lies a *gom-pa*, called Jio; and continuing the ascent for three-quarters of a mile, we reached the pass of Jio. Descending thence  $2\frac{1}{4}$  miles to a stream flowing from the north-west, close to a hamlet containing 3 houses, we followed it for  $2\frac{1}{4}$  miles, and crossed it, here 15 paces wide and 2 feet deep, to the right bank. Continuing along it for  $1\frac{1}{2}$  miles, we forded a small stream from the west, and  $3\frac{1}{4}$  miles further reached a spur by a slight ascent. Here we observed that a stream coming from a lake near the Ghotu pass joined the one along our route and the joint stream flowed east towards the Chiamdo Chu. Continuing our progress for  $2\frac{1}{4}$  miles up the latter stream, we arrived at Cha Churtan, on the right bank, close to where a stream from the north joins it. This *churtan* which is one of the sacred places in Tibet, is surrounded by 30 houses. We found here two species of the chough, one common in Tibet, has beak and legs red and feathers black, and the other has feathers spotted or pie-bald, but beak and claws black. Both of these were numerous here, and the cultivators had to keep a watch over their fields to preserve the seed which had lately been sown from being eaten up by them. We stopped here for 3 days on account of snow; observations for boiling point were taken (height 10,640 feet). Two miles to the south of the *churtan* and on the top of a hill is a *gom-pa* occupied by 30 *Dabas*.

202. On the 30th, proceeding  $10\frac{1}{4}$  miles through a thick forest along the stream which receives six small tributaries—two from the right and four from the left—we arrived at an encamping ground where we stopped for the night.

203. On the 31st, proceeding over snow for  $1\frac{1}{4}$  miles, we found a frozen stream coming from the south, and 2 miles further on, reached a lake from which that stream issued. A stiff ascent of  $1\frac{1}{4}$  miles brought us to the Ghotu pass then covered with snow, and a difficult descent of 2 miles also over snow, took us to a small frozen lake, from which a stream emanated and flowed along our route. Continuing to descend for half a mile along it, we found that it received a tributary from the south-east, and  $5\frac{1}{4}$  miles further on another from the north. We stopped near this junction in a forest of *deodür* trees for two nights, as we were suffering badly from ophthalmia brought on by glare.

204. On the 2nd April, proceeding  $1\frac{1}{4}$  miles, we crossed a stream from the south-east, and continuing our progress for  $3\frac{1}{4}$  miles further, arrived at the village of Dayul, 15 houses, on the right bank of the stream along our route. Half a mile thence we crossed by a wooden bridge a stream, 60 paces wide and 3 feet deep, coming from north. Ascending 500 paces we reached the *gom-pa* of Dayul which is surrounded by 100 houses, including a large house, the residence of a Jongpon. Dayul is situated in a narrow valley in the midst of a thick jungle abounding with wild sheep and musk deer. The price of musk as sold in the pod is at Rs. 2 per *tola*: large quantities of this article are carried from these parts to China. Patches of cultivation were found here. We were informed that no person was allowed to go beyond the district of Dayul which extends from the Jio pass to the Koli pass, on account of the small-pox which was then raging in the district; but as the Jongpon of Dayul was going to Sanga Chu Dzong, distant in a direct line about 65 miles due west, yet not capable of being reached except by a detour of over 100 miles, we were allowed to accompany him. Observations for latitude and boiling point were taken here (lat.  $29^{\circ} 12' 13''$ , height 11,450 feet).

205. Leaving the *gom-pa* on the 4th April 1882, we crossed after half a mile a stream which coming from the south-west flows to the east and joins another flowing to south-east. Marching  $5\frac{1}{4}$  miles up another stream which receives three small tributaries, we crossed a spur from the Koli pass and ascending  $2\frac{1}{4}$  miles further, reached the pass itself. Descending  $1\frac{1}{2}$  miles to a stream, we proceeded along it  $1\frac{1}{4}$  miles and arrived at Koli village, 8 houses, where we halted for the night.

206. On the 5th, proceeding  $2\frac{1}{2}$  miles along the right bank, we crossed a small stream coming from the north. The joint stream leaves the route and flows to the south-west towards

the Gama Nu Chu. Marching three-quarters of a mile thence, we reached the *gom-pa* of Jior and about the same distance further arrived at the village of Jior containing 25 houses, where we stopped for the night. To-day we had a heavy fall of snow.

207. The next day we left the village and after a stiff descent of  $5\frac{1}{4}$  miles reached Thangshu Dukha (ferry), height by boiling point 7,160 feet, and crossed the Gama Nu Chu also called Nu Chu, which is deep and rapid and about 200 paces wide. We crossed here on planks which were propelled by oars, and kept from being carried down the current by some of the boatmen holding on to a rope stretched across the river. This river is formed by the junction of several streams which issue from the range between the Ata Gang\* and Nub Kong† passes, and is said to flow in a narrow valley running from north-west to south-east, and finally to pass by Kiu Chiako, a noted place of pilgrimage in Burma. About 12 miles to the north-west of Thangshu Dukha, a large stream coming from the north, through the Charong district, joins the Nu Chu. A quarter of a mile from the right bank, we arrived at a small *gom-pa* where we remained for two nights. There was a scarcity of firewood and grass.

208. On the 8th, ascending  $3\frac{1}{4}$  miles we passed by a village containing 15 houses.  $2\frac{3}{4}$  miles further we reached a spur and descending thence for  $2\frac{1}{4}$  miles arrived at Yu village where we halted. Grass was scarce, but firewood was abundant.

209. The next day having marched  $4\frac{1}{4}$  miles, we arrived at the village of Hākha containing 15 houses, and descending thence for a mile reached the village of Ji, where we stopped for eight nights. This village is situated near the junction of two streams from north and south with one emanating from a small lake below the Tila pass. This stream receives in its course numerous tributaries from the right and left, and 10 miles to the east joins the Nu Chu. About 2 miles to the north of the village, and on the left bank of the stream, is a *gom-pa* inhabited by 80 *Dabas*; towards the south is the snowy range of Rirapphasi which is regarded by Tibetans from all parts of the country as an object of deep veneration and which they circumambulate in great numbers as a religious exercise. Near this village patches of cultivation were found. The Jongpon's official business detained him here.

210. Having heard that the Tila pass would soon be practicable, as the snow was melting, we left the village on the 17th April and proceeding half a mile, crossed the stream, 25 paces wide and  $2\frac{1}{2}$  feet deep. Marching for  $1\frac{1}{4}$  miles up its left bank we arrived opposite the junction of a stream from the south, and thence observed two snowy peaks of the Rirapphasi range, bearing  $207\frac{1}{4}^{\circ}$  and  $212\frac{1}{3}^{\circ}$ , and distant 4 miles. Continuing our journey for  $6\frac{1}{4}$  miles and passing *en route* two small hamlets, we crossed a stream from the west, and from its right bank observed a snowy peak bearing  $287\frac{1}{2}^{\circ}$  and distant 4 miles. We stopped here for the night and found grass and firewood in abundance.

211. The next day proceeding 11 miles up the stream which receives in this distance four tributaries—two from the left and two from the right—we arrived at the village of No-yu, containing 20 houses, and surrounded by a thick jungle.

212. On the 19th, proceeding  $7\frac{1}{4}$  miles up the stream, and passing *en route* three small streams from the right and left, we reached the village of Niakho, containing 15 houses.  $1\frac{1}{4}$  miles further we crossed a stream from the south-east and halted near it for the night.

213. On the 20th, marching  $2\frac{1}{4}$  miles up the stream, we observed a frozen lake to the left of our route, and ascended thence  $1\frac{1}{4}$  miles over snow to the Tila pass (height by boiling point 16,110 feet). The district of Nu Chu Gyu lies between the two passes the Kpli to the north-east and the Tila to south-west. Descending for  $1\frac{1}{4}$  miles over snow to a stream proceeding from the pass, and following it for 6 miles through a thick forest, we crossed a stream from the north-east and stopped near its junction for the night.

214. On the 21st April 1882, marching  $3\frac{1}{4}$  miles along the stream, we arrived at the hamlet of Rika, containing six houses;  $1\frac{1}{4}$  miles further, in which distance the main stream received two tributaries from the north and one from the south-east, we reached a small hamlet; a little beyond this is another tributary from the north.  $6\frac{1}{4}$  miles beyond, we arrived at another small hamlet of three houses situated near the junction of a stream from the south, where we halted for the night. Grass and firewood were abundant.

215. On the 22nd, marching  $2\frac{1}{2}$  miles along the stream we arrived at the *gom-pa* of Drowa (height by boiling point 8,800 feet) surrounded by 25 houses, situated near the junction of the stream with the river called Zayul Chu coming from the north. Hence a route branches off to the fort of Sanga Chu Dzong, distant about 50 miles to the north, where two Jongpons reside

\* In the north of the Zayul district.

† On the boundary between the Lharugo and Arig districts.

and which is said to have some 250 houses near it. Continuing for 10 miles along the left bank of the river and passing *en route* two small streams from right and left, some small hamlets and a rope-bridge, we crossed a stream, 30 paces wide, coming from the east. A mile further we crossed another stream, 25 paces wide and two feet deep, and a quarter of a mile further still reached the hamlet of Chikung, four houses. Opposite the hamlet and on the right bank of the river, is Gāwa village containing 15 houses, with patches of cultivation watered by a small stream which joins the river half a mile to the north. We stopped at the hamlet for the night and found grass and firewood abundant.

216. On the 23rd, proceeding  $8\frac{1}{2}$  miles along the left bank of the river, which in this distance receives four tributaries from the right and left, we crossed by a wooden bridge to the right bank. The river is about 80 paces wide, is deep and has a rapid current. A mile further along the right bank we reached the hamlet of Dabla, containing 10 houses, and a quarter of a mile further crossed a stream coming from the north. Marching thence for a mile we arrived at a small hamlet, where we stopped for the night. Paddy fields were observed for the first time; grass and firewood were abundant.

217. On the 24th, marching  $17\frac{1}{2}$  miles along the river and having crossed it twice, we arrived at a small hamlet, where we halted. In this distance the river is fed by six small streams coming from the right: we also passed a small hamlet on the left bank opposite which on the right bank was a *Lhakang* or temple. Grass and firewood were abundant.

218. On the 25th, proceeding  $2\frac{1}{2}$  miles we crossed a large stream, 65 paces wide, which comes from the north-west. Half a mile further, we crossed the Zayul Chu river by a wooden bridge about 100 paces long, and continuing our journey for 3 miles, forded a stream from the east.  $1\frac{1}{2}$  miles further on, a small stream from the south joined the river, and  $5\frac{1}{2}$  miles onward we reached the junction of Rong Thod Chu and Zayul Chu rivers. Half a mile thence we crossed a stream from the east a little below which a rope-bridge spans the river, and half a mile further arrived at Shikha in the district of Zayul.

219. Shikha is the winter residence of the officers of the Zayul district. The buildings about 25 in number, constructed after one pattern by the *Zaminlars* for these officials, lie in the lands of the village of Rima. They are made of timber and some of them are two stories high. The officers who reside here are:—a Jongpon, a *Shiān-u* (the civil and magisterial officer of a district), a *Jām Pon* (custodian of the bridges in the district), and a number of subordinates and attendants. This place is also the resort in winter of traders from all parts of Tibet. The district of Zayul, which is said to extend from the Tila pass to the Ata Gang pass, is bounded on all sides by lofty ranges\* of snowy mountains. The spurs which shoot off from them are thickly covered with large trees and long grass; the latter of which affords good nourishment to wild and domestic animals. I was surprised to hear that though the forest was full of game, no venomous serpents or carnivorous beasts were to be found. The following are the domestic animals bred by the inhabitants; oxen, *jobos* and *jomos* (male and female animals obtained by cross breed between a bull and a female yak, or *vice versa*), horses, hogs and fowls. Cows are never milked because it is supposed to render the calves weakly; but the milk of the *jomo* is in general use. The climate of the district is mild. Goitre is a common disease from which very few escape.

220. The inhabitants of the district are very simple in their habits. The dress of both sexes is made from a kind of striped cloth woven from a mixture of hemp and wool. The men shave their heads like *Dabas* and Lamas, but the women dress their hair in two long plaits, which are wound round the head and tied together in front. The hair thus arranged looks like a cap from a distance. They use no umbrellas, but make hats of straw or reed to protect their heads against sun or rain. Their language differs very much from that of the Tibetans, which however they understand very well, and their mode of expressing themselves is amusing, as they speak in a very loud tone of voice and with many gesticulations. They profess Buddhism, but rarely visit *gom-pas* or other sacred places, and have full belief in the sacrifice of pigs and fowls, which they offer to propitiate gods during times of distress. They burn their dead like the Hindus of India. The chief articles of diet are rice, unleavened bread, meat, a kind of paste made by boiling flour of various grains, and some vegetables mostly found growing wild. They mix a large quantity of chillies with their food. They raise two crops; one of these, reaped in October and November, comprises paddy, *kodo* (a small grain called *mandwa* in India), Indian corn, millet, *dau*, and varieties of pulse grains, such as *kulath*, *masūr*, *matar* and *urd*: the other crop which is harvested in April and May, consists of barley, *ne*, wheat, and *sarson* (a kind of mustard). Of fruits, the lemon, plantain, walnut and peach only are found in the district.

221. This district is much frequented by traders from the Mishmi or Nāhong tribe, who

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\* The range to the north is known as the Neching Gangra range (see map).

live in the forests bordering it. The articles of merchandise which they bring for exchange are *shugshing* (the bark of a plant used for making paper), *ram* (a kind of grass which yields blue colour), *choi* (a kind of grass which yields yellow colour), *shingcha* (the root of a plant exported to China for colouring silk, and which according to some is also used there as medicine) and deer skins. Besides these productions of their own country, they bring various kinds of cloth and money from Assam, and exchange them for salt and horned animals. They also kidnap children from Assam, and sell them as slaves here. We saw here an old man 70 years of age, a native of India, who said that he had been taken captive with eight others by the Mishmis some 50 years ago and all were sold for one horned animal each. This district is considered by Tibetans as the warmest place in their country and therefore any person who is guilty of a crime requiring transportation for life is sent here by the Government of Lhāsa to undergo that sentence. These culprits are branded over their foreheads.

222. No sooner had we entered Shikha, than we were made to pay a rupee to the *Jām Pon* (the custodian of the bridges) as a ferry toll, and were soon afterwards seized by the *Shiān-u*, who ordered us to remain in quarantine for 22 days, owing to our coming from the district where small-pox was raging. The road from Gartok to this place was narrow, undulating, stony and rugged, and its general direction was south-west. Observations for boiling point were taken here (height 4,650 feet), but we had no means of taking observations for latitude as the mercury had leaked away near the Koli pass.

223. On the 23rd May 1882, we resumed our journey and having retraced our steps to the rope-bridge, we crossed over to the right bank of the river which is here about 250 paces wide, deep and rapid. Proceeding 1 mile we found that a stream from the east joined its left bank near a small village containing 15 houses. Continuing our journey for  $4\frac{1}{2}$  miles, we arrived at the hamlet of Singu, containing seven houses, and three-quarters of a mile onward, crossed a small stream from the west by a wooden bridge about 15 paces long. Three-quarters of a mile further, we reached the village of Sama, containing seven houses, situated on the border of the Mishmi country and about 16 miles to the north of the hamlet of Zayulmed on the Tibetan boundary on that side. We here endeavoured to make arrangements to cross the Mishmi country and to reach Assam, but were told that if we trusted ourselves to the Mishmis we were sure to be murdered, as they were little better than savages.

224. Finding it inadvisable to return by this direct route to India, we were obliged to adopt the circuitous one by Lhāsa; but hearing that the Ata Gang pass on the latter route, was at that season impracticable on account of snow, and as the small amount of money then in our possession was not sufficient to cover the expenses of that long journey, we employed ourselves in going about from house to house in the villages of Singu, Sama, Rima and Duning, reciting from Tibetan sacred books and thus succeeded in collecting some twenty rupees.

225. On the 9th July 1882, we resumed our journey, and proceeding  $1\frac{1}{2}$  miles from the rope-bridge up the right bank of the Rong Thod Chu, we crossed a stream coming from the west, and  $1\frac{1}{2}$  miles further arrived at the hamlet of Duntang, 3 houses, where we halted. The headman of this hamlet had a slave, about 30 years of age, purchased from a Mishmi, who had brought him from Assam some 16 years ago.

226. On the 10th, continuing up the right bank of the river for  $2\frac{1}{2}$  miles, we crossed a stream by a wooden bridge 25 paces long, and a quarter of a mile further reached the village of Bonathang.  $1\frac{1}{2}$  miles further, we passed opposite Thaling hamlet situated near the junction of a stream coming from the east, and 2 miles onward arrived at the hamlet of Timi, where we halted.

227. On the 11th,  $2\frac{1}{2}$  miles from the hamlet, we crossed a stream coming from the south-west, and  $1\frac{1}{2}$  miles further reached the hamlet of Di, 7 houses, where we stopped three nights.

228. On the 14th, after proceeding  $\frac{1}{2}$  a mile, we crossed a small stream coming from the west, and marching three-quarters of a mile further arrived opposite a *gom-pa* named Chiāngsi, situated on the left bank of the river. Continuing our journey for  $2\frac{1}{2}$  miles we crossed a stream by a wooden bridge 20 paces long, and 4 miles further arrived at the hamlet of Thoyu, 3 houses. Here we remained two nights. We here saw a lad, 7 years of age, from Assam, who had been sold as a slave by a Mishmi last year.

229. On the 16th, having crossed two streams from the west within  $3\frac{1}{2}$  miles, we arrived at the hamlet of Tithong, 3 houses. Opposite to this hamlet a stream from the north-east joins the river, and up the former a path goes to the nomad camp of Luba about 25 miles distant and to the north of the Neching Gangra range. The hamlet of Tithong contains a large house built for the *Shiān-u* of the Zayul district, who occupies it for three months in the rainy season. I was detained here for two nights on account of the illness of my companion Chambel.

230. On the 18th, after three-quarters of a mile, we reached the *gom-pa* of Jungu surrounded by eight houses, and 6 miles further, having passed *en route* two small streams from the south-west, we crossed a stream by a wooden bridge 25 paces long. This stream comes from the west and nearly opposite to it another from the east joins the river. Continuing  $2\frac{1}{4}$  miles up the right bank of the river, we arrived at the *gom-pa* of Murgu surrounded by 10 houses.

231. On the 19th, proceeding  $2\frac{1}{4}$  miles, we forded a stream coming from the west, and thence leaving the regular route which crosses the river, we proceeded 2 miles to the north-west to the village of Sonling, 15 houses. The inhabitants of this village are esteemed the wealthiest in the Zayul district. About 45 miles to the north-west is a sacred peak called Pemakaun, which is rarely visited by pilgrims as they have to pass through the country of the *Lhobas* who are much addicted to robbery. These *Lhobas* inhabit the Lhoyul district to the north-west of the Mishmi country. Their manners and customs are similar to those of the Mishmi though their language is somewhat different. They bring the same articles of merchandise as the Mishmis and exchange them for salt at Sonling. We stopped here for three nights: height by boiling point 6,200 feet.

232. On the 22nd, we retraced our steps to the point where we had left the route, and having crossed the river by a rope-bridge 70 paces long, we resumed our journey in company with some other travellers who were going northwards to the district of Nagong.  $3\frac{1}{4}$  miles up the left bank of the river, we passed opposite the junction of a stream from the west, and half a mile further reached the hamlet of Isamedh close to which a stream from north-east falls into the river. Proceeding  $4\frac{1}{4}$  miles thence we crossed a stream coming from north-east, opposite to the junction of which is the hamlet of Rangyul containing 5 houses. A mile further we arrived at Isatodh, where we stopped for the night. Rice-fields were numerous between Dabla and this place.

233. On the 23rd, proceeding  $4\frac{1}{4}$  miles up the Rong Thod Chu, we passed opposite the confluence of a stream coming from the west, and a quarter of a mile further came to an abrupt and difficult descent of 300 paces with steps leading down: we were informed that there was a circuitous route for laden animals. Three-quarters of a mile onward we forded a stream coming from north-east, and  $2\frac{1}{4}$  miles thence arrived at an empty house, opposite to the junction of a stream, where we halted.

234. On the 24th July 1882, marching for a mile up the left bank, we forded a stream coming from the north-east, and ascending thence at an easy gradient for 3 miles along the hill side by a very bad path, we came to the junction of two streams, one from the north-west and the other from the north-east, forming the Rong Thod Chu. A difficult descent of half a mile brought us to the left bank of the stream from the north-east, which we crossed by a rope-bridge\* about 40 paces long, and halted on its right bank for the night.

235. On the 25th, proceeding  $5\frac{1}{4}$  miles along a bad path which lies a little above the narrow bed of the stream that comes down from the north-east, and passing *en route* 2 streams, one from the north and the other from the south, we reached the village of Modung, containing 5 houses, where a very rich man resides. We halted here 3 nights.

236. On the 28th, we resumed our journey along the bank of the stream, and within three-quarters of a mile crossed 2 streams coming from the north. Continuing for  $2\frac{1}{4}$  miles up the stream, we found that a large stream coming from the east joined it and heard that at the distance of 8 miles and on the right bank of this stream was the village of Sugu, 8 houses. 2 miles further up the right bank of the stream, we arrived at the hamlet of Lasi, 3 houses, and three-quarters of a mile further, crossed a stream coming from the north-west. Proceeding thence for about a mile we reached the village of Ata where we remained for 6 nights. Elegant wooden cups are made here. This is the most northern village in the Zayul district where cultivation is carried on. Grain is cheap and the inhabitants of the Nagong district come here to purchase. It is said that from the spurs of the mountains on the west, the snowy peaks of the Neching Gangra range on the east are visible. These peaks are objects of religious veneration to Tibetans. Observations of the boiling point were taken here (height 7,950 feet).

237. On the 3rd August, we crossed the stream which, when we had gone  $1\frac{1}{4}$  miles further, we observed issued from a glacier. The path winds for  $5\frac{1}{4}$  miles along the south-eastern side of the glacier which stretches from the north-west, and by a stiff ascent of  $1\frac{1}{4}$  miles comes to a small stream and by a further rise for three-quarters of a mile to the encamping ground of Chutong, where we halted. From Shikha to this place, with the exception of cleared and cultivated spots in the vicinity of villages, the hill sides are covered with forest trees.

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\* This rope-bridge consists of two stout ropes stretched parallel to each other with cross ropes tied to them and hanging at convenient distances, on which planks are laid.

238. On the 4th, proceeding three-quarters of a mile, we reached a pass by a steep ascent and there observed a snowy peak bearing  $325\frac{1}{2}^{\circ}$  and distant  $3\frac{1}{2}$  miles. Descending  $1\frac{1}{2}$  miles we came to the southern edge of the continuation of the glacier mentioned before and crossed it, here three-quarters of a mile wide, and following up the western edge for 1 mile we came to the pass of Ata Gang over the Neching Gangra snowy range. Proceeding  $2\frac{1}{2}$  miles over the glacier and  $1\frac{1}{2}$  miles along a stream emanating from it, we arrived at a small unoccupied house, probably built for the accommodation of travellers, near the junction of a stream from the north-west with the one along the route. We stopped here for 5 nights owing to a continuous fall of rain. Observations for boiling point were taken here (height 14,690 feet). Some 5 tents belonging to nomads were seen in the vicinity.

239. On the 9th, proceeding 3 miles along the right bank, we forded a stream 50 paces wide and 2 feet deep, which issuing from a small glacier to the east falls into the stream along our route. A little further on, another stream from a lake to the west, about 2 miles long and three-quarters of a mile broad, joined the stream which lower down is named the Nagong Chu. Continuing our journey for 3 miles, we arrived at the village of Lhagu, containing 20 houses, where we halted for the night. A little cultivation was visible here. The road was level. Grass and firewood were abundant. The river here forms a large pool on account of a small glacier from the west impeding its course, but finds an outlet under its eastern extremity: the route continues along it.

240. On the 10th, proceeding three-quarters of a mile, we reached the edge of the glacier mentioned above and skirted it for a mile. Continuing for 2 miles along the right bank of the river, we crossed a stream 25 paces wide, coming from the east, and half a mile further reached a village of 10 houses opposite to the junction of a stream from the west. Marching  $3\frac{1}{2}$  miles along a spur up a slight ascent, we arrived at the small hamlet of Khānsar, and  $2\frac{1}{2}$  miles further, reached the temple of Nagongjho. Descending thence half a mile we crossed a stream by a wooden bridge 30 paces long. This stream comes from the north-east and flowing to the west for  $1\frac{1}{2}$  miles joins the river a little above a bridge made of masonry and timber over the latter. This bridge is about three-quarters of a mile long, and the river for some miles above and below it flows in a low level valley, and presents the appearance of a broad sheet of water. Ascending for half a mile from the stream we arrived at the *gom-pa* of Shiuden situated in a lovely spot on high level ground overlooking the river. This *gom-pa* has 100 *Dabas*, and is surrounded by about 150 houses. Having arrived from Zayul we were suspected by the official here of being escaped convicts; but some days after our arrival a rich man from Rima happening to visit the *gom-pa* obtained permission for us to proceed. A route branches off from this place to the fort of Sanga Chu Dzong to the east. Observations for boiling point were taken here (height 13,650 feet).

241. On the 20th August 1882, we resumed our journey and proceeding  $6\frac{1}{2}$  miles along the river, arrived at the village of Rānya, 10 houses. Within this distance the river received 3 small tributaries from east and west. Marching  $1\frac{1}{2}$  miles further we reached a stream which flowing to the west for 2 miles joins the river close to the village of Rahu, 8 houses; the river thence turns to the west and flows through the Po me country. A shorter route to Lhāsa, practicable for foot passengers only, passes through Po me and Kongbo, but on account of the sickness in the Zayul and Lhāsa districts, the inhabitants of Po me and Kongbo had applied for and obtained permission from the Government at Lhāsa to close the route that year. Having crossed the stream mentioned above, which is 20 paces wide, we rested for the night at the temple of Nankhazod. Grass and firewood were abundant.

242. On the 21st, re-crossing the stream to the left bank and proceeding for  $11\frac{1}{2}$  miles, we arrived at a small lake from which the stream issued. This stream received besides 4 small tributaries within that distance from the east and the west. Proceeding 1 mile, we crossed a low pass by a slight ascent. The district of Nagong is said to extend from the Ata Gang pass to this pass. Three-quarters of a mile beyond the pass, we forded a stream which coming from the west flows along the right of our route. Here we found some tents appertaining to the nomads and halted for the night. Grass and firewood were abundant.

243. On the 22nd, marching for  $5\frac{1}{2}$  miles along the left bank of the stream, we crossed a small one coming from the west and reached the hamlet of Gonkha containing 5 houses. Continuing on for 2 miles, we crossed a wooden bridge about 30 paces long over a stream which coming from the north-west flows to the east for a mile and then falls into that along our route. On the left bank of this stream and close to the route is the village of Dongsar, containing about 40 houses and a *gom-pa*; and about 2 miles higher up and half a mile from the same bank is a *gom-pa*, named Au-takpa, surrounded by 40 houses. The village of Dongsar is situated in an extensive and well cultivated valley. We remained here for 4 nights and took service with a rice merchant who had brought that article from Zayul and was taking it to Shiobado (Shobāudo) (distant



about 100 miles further on the same route that we were following) for sale; the rice was carried on mules. Boiling point observations were taken here (height 13,850 feet).

244. On the 26th, we resumed our journey along the left bank of the stream, and after proceeding 2 miles passed the junction of a small stream from the east.  $1\frac{1}{2}$  miles further on, another stream from the east joined it, and 3 miles thence we arrived opposite the *gom-pa* of Dango situated on the right bank of the stream. A bridge 45 paces long communicates with the *gom-pa* from which a road leads to the fort of Pashu Dzong distant about 50 miles due north. Continuing along the left bank for  $4\frac{1}{2}$  miles, we arrived at the village of Diu, containing 8 houses, where we rested for the night. Grass and firewood were abundant. From Ata Gang pass to this village the road was generally speaking good.

245. The next day, after going  $\frac{1}{2}$  a mile we crossed a small stream which flows into the one along our route.  $1\frac{1}{2}$  miles further on we reached the village of Bungyu, 8 houses, and half a mile onward we crossed another stream coming from the west. The main stream here turns to the east and flows into the Giama Nu Chu. Marching for 4 miles up a tributary of the main stream, coming from the Bungyu pass, we halted for the night. Grass and firewood were abundant.

246. On the 28th August 1882, ascending for a mile over snow, we reached the pass of Bungyu, and descending thence for  $1\frac{1}{2}$  miles to a stream which we followed for  $5\frac{1}{2}$  miles to its junction with another from the west. At this junction, where we remained for two nights on account of rain, were some nomad tents. Grass and firewood were abundant. The Bungyu pass is on the boundary between the districts of Dainsi and Pashu.

247. On the 30th, marching for  $2\frac{1}{2}$  miles along the left bank of the stream, we found that another from the south-east joined it, and a quarter of a mile further we crossed to the right bank by a wooden bridge about 25 paces long. Having proceeded for  $4\frac{1}{2}$  miles along the stream which in this distance received two tributaries from the right and left, we reached the junction of one from the north. The joint stream hence turned to the west and the path going up the stream from the north for 4 miles brought us to an encamping ground near the junction of a stream from the west. Here we rested for the night. Grass and firewood were abundant. From Diu to this place the road was rugged and stony.

248. On the 31st, having forded a stream from the west,  $1\frac{1}{2}$  miles from our last halting place, we came  $1\frac{1}{2}$  miles further to a pass by a steep ascent; and  $4\frac{1}{2}$  miles down a stream emanating from the pass, which in this distance receives two small ones from the left and right, we arrived at the hamlet of Tapsing, 5 houses, where we stopped for the night. Grass and firewood were procurable. There were no villages or cultivation between Bungyu and Tapsing.

249. On the 1st September, continuing  $1\frac{1}{2}$  miles along the stream, we found that it flowed into a larger one coming from the west and going off towards the Giama Nu Chu. A route goes down this stream to the fort of Pashu Dzong, which is about 16 miles to the north-east. Crossing this stream, 20 paces wide and  $1\frac{1}{2}$  feet deep, and proceeding up another from the north for 4 miles, we reached some nomad tents at the foot of a pass and there halted for the night. Grass and firewood were procurable.

250. On the 2nd, ascending gradually for  $1\frac{1}{2}$  miles, we arrived at the pass and descending thence for 7 miles along a small stream issuing from it, we crossed a large one by a bridge named *Giok Jam*, 45 paces long. This is the same stream which took its rise from the Bungyu pass and flowing in a northern direction for some miles along our route turned to west: winding round the range connecting the two last mentioned passes it changes its course to the east, and flows into the Giama Nu Chu. Near this bridge and on either bank of the stream are several hamlets at one of which we remained for two nights. Grass and firewood were procurable. Cultivation is carried on here; peaches and apricots were found in abundance. Observations for boiling point were taken here (height 11,040 feet). A toll of 4 annas is levied from each passenger across the bridge.

251. On the 4th, ascending for  $1\frac{1}{2}$  miles we reached a *gom-pa* named Baimbu, and continuing for  $6\frac{1}{2}$  miles to ascend a stream from the north-west, we arrived at the village of Rango, 10 houses; a mile thence, we crossed a stream which coming from the south-west joins the one along our route. 2 miles further we reached the *gom-pa* of Niopha, surrounded by 10 houses. This day we travelled through an inhabited part of the country. Grass and firewood were procurable.

252. On the 5th, proceeding for  $1\frac{1}{2}$  miles, we reached a pass by a slight ascent. Here the district of Pashu ends and that of Lho Dzong begins. The road through the former district was undulating, rugged and stony. Travelling for  $7\frac{1}{2}$  miles through a narrow valley, we crossed a pass by a slight ascent. Within this valley we passed four small streams which issuing from



the eastern mountains form a large stream which flows below the large *gom-pa* of Jiaphang to the west and after some distance turns abruptly to the south and joins the large stream which emanates from the Bungyu pass. Descending for  $3\frac{1}{2}$  miles along a stream which takes its rise from the pass, we arrived at the *gom-pa* of Ong situated near the junction of a stream from the north-east, where we halted for the night.

253. On the 6th, continuing along the stream for 2 miles we crossed a small one which comes from the east, and proceeding for 4 miles through an inhabited country, arrived at the village of Chukpodesa situated at the junction of the stream along our route with another from the west. The united stream flowing to the east for some miles joins the Giama Nu Chu. Two miles to the north of this village and on the left bank of the stream is the fort of Lho Dzong, where two Jongpons reside. Near the fort is a large *gom-pa*, a *giachua* and 150 houses. The general direction of our route from Shika in the district of Zayul to this village was northwards. We stopped at the fort for the night and took boiling point observations (height 13,140 feet). We here struck the high road from Fa-chien-lu to Lhāsa\*, from which we had diverged at Gartok with the intention of returning to India through Assam. The following is a list of the *giachuas*, with their estimated distances from each other in *Lis*†, *en route* from Gartok to Lho Dzong fort:—

Risi	...	...	...	...	...	60
Nimāgo	...	...	...	...	...	70
Dāyāgi Sācham	...	...	...	...	...	60
Rasi	...	...	...	...	...	60
Asi	...	...	...	...	...	60
Dāyāg	...	...	...	...	...	60
Jiamdo	...	...	...	...	...	60
Gham	...	...	...	...	...	50
Wangka	...	...	...	...	...	50
Bāgāng	...	...	...	...	...	60
Pāngdha	...	...	...	...	...	60
Mongpho	...	...	...	...	...	70
Chiamdo (on left bank of the Chiamdo Chu)	...	...	...	...	...	80
Lungdha	...	...	...	...	...	90
Lagang	...	...	...	...	...	90
Nulda	...	...	...	...	...	80
Mari	...	...	...	...	...	90
Shang-ye Jam (on left bank of the Giama Nu Chu)	...	...	...	...	...	80
Lho Dzong	...	...	...	...	...	120

254. On the 7th September 1882, we left the fort and retracing our steps to Chukpodesa village, crossed the stream coming from the west by a wooden bridge 15 paces long. Proceeding  $8\frac{1}{2}$  miles by a smooth and level path up the stream which waters the fields of the villages on both sides of it, we arrived at its source, and 2 miles thence reached a pass by a slight ascent. Our route now entered the district of Jithong (Jithog). Descending for  $7\frac{1}{2}$  miles along a stream which rises from the pass, we reached the *gom-pa* of Jithong (Jithog), having 200 houses and a stage-house situated near it, close by the junction of a large stream from the south-west with the one along our route. We rested here for the night.

255. On the 8th, following down the above stream for 12 miles and passing *en route* several small villages and two *gom-pas*, we crossed it a little above its confluence with another from the west, by a wooden bridge 25 paces long. The joint stream flows hence to the east and falls into the Giama Nu Chu. Crossing the stream from the west by a wooden bridge 20 paces long and proceeding up it for  $3\frac{1}{2}$  miles, we arrived at Shobando near the junction of a stream from the south-east, which possesses about 200 houses, a small *bāzār*, a *gom-pa* and a stage-house, and is the place of residence of some Chinese officials. As the rice merchant's journey ended here we now took service with a trader from Charong who was going to Lhāsa. Boiling point observations were taken here (height 12,470 feet).

256. On the 9th, marching for  $5\frac{1}{2}$  miles up the stream from the west we reached its junction with another from the south; continuing for 4 miles further we gained a pass by a steep ascent and entered the district of Pemba. Descending a mile to a *gom-pa* to the right of the route and thence following a stream for  $3\frac{1}{4}$  miles, we arrived at its confluence with another from the south. Here we found some 20 tents of nomads who remain during the rainy season to pasture their cattle. The stream hence turned to the north and the route continuing westward up an ascent for 5 miles, brought us to an encamping ground where we passed the night. Grass and firewood were abundant.

\* See para 199.

†  $4\frac{1}{2}$  *Lis* are approximately equal to 1 English mile.

257. On the 10th, after a steep ascent of three-quarters of a mile, we gained a pass and descending thence  $3\frac{1}{2}$  miles we crossed a stream 12 paces wide flowing to the north, on the left bank of which is the *giachug* of Bari and a stage-house. Continuing for 4 miles up this stream which thence turned to the north, we proceeded up an ascent for 2 miles and arrived at an encamping ground where we remained the night. Grass and firewood were abundant.

258. On the 11th September 1882, ascending for half a mile we arrived at a pass and descending from it for  $3\frac{1}{2}$  miles found a stream coming from the south-east: some nomad tents were near the route. Continuing  $4\frac{1}{2}$  miles along this stream, we crossed a small stream from the north-east, and proceeding 6 miles further, we crossed the stream by a wooden bridge 25 paces long. 2 miles thence, we arrived at Lhâche, where there are 10 houses, a *giachug*, a stage-house and a *gom-pa*. We stopped here for the night. From Shobando to Lhâche the route is good, but passes through a sparsely inhabited country. The nomads of Poto, the tract across the snowy range to the south of our route, sometimes rob travellers. The stream here receives a tributary from the south-west and turns to the north.

259. On the 12th, proceeding  $1\frac{1}{2}$  miles up the stream from the south-west, we crossed it by a wooden bridge 15 paces long.  $1\frac{1}{2}$  miles further we reached a pass by a steep ascent and descended thence for a mile to a stream which comes from the south-west. Proceeding  $7\frac{1}{2}$  miles along this stream, and passing *en route* 3 small streams from the left, we arrived at the large *gom-pa* of Pemba. There are about 100 houses, a *giachug* and a stage-house, and some cultivation. We stopped here for the night.

260. On the 13th, proceeding  $3\frac{1}{2}$  miles along the stream, we crossed it by a wooden bridge 40 paces long. Marching three-quarters of a mile we crossed a small stream coming from the south, and  $2\frac{1}{2}$  miles further passed another from the same direction.  $4\frac{1}{2}$  miles lower down the stream, we reached the *gom-pa* of Chiakra,  $1\frac{1}{2}$  miles beyond which the stream turned to north-east. Marching for a mile, we crossed a stream which rises from the Shiar Gang pass and then turning to the north-east flows into the stream before mentioned. About one mile to the west of the junction is the *gom-pa* of Bârgo. Continuing up the Shiar Gang pass stream for 2 miles, and passing *en route* 2 small streams joining it from the south, we arrived at the *giachug* of Urgentâmdha, where we stopped for the night. There are about 15 houses, a stage-house and a small *lhakang*. Grass and firewood were procurable. The path from the Lhâche Gom-pa to this place is level, and lies through an inhabited part of the country.

261. On the 14th, proceeding  $6\frac{1}{2}$  miles, we crossed the Shiar Gang pass by a steep ascent. Our route now entered the district of Arig. Descending for  $4\frac{1}{2}$  miles along a stream which rises from the pass, we crossed it a little above its junction with another stream from the north-west. We halted here for the night. Grass and firewood were procurable.

262. On the 15th, proceeding  $5\frac{1}{2}$  miles along the stream from the pass, we crossed a small stream coming from the north-west by a wooden bridge 15 paces long. Following the stream for  $1\frac{1}{2}$  miles, and crossing it twice in that distance by bridges each about 25 paces long, we arrived at the Namgialgon *Giachug*, where there were 4 houses, a stage-house and a small *gom-pa*. Continuing on for  $2\frac{1}{2}$  miles, we observed a snowy peak bearing  $203\frac{1}{2}^{\circ}$  and distant  $4\frac{1}{2}$  miles, and  $2\frac{1}{2}$  miles further reached the place where the stream along our route empties itself into a large one coming from a bearing of  $117\frac{1}{2}^{\circ}$  as also does a smaller one from the south-east: there is a *gom-pa* near this junction. Proceeding three-quarters of a mile, we came to a small lake to the right of the route, opposite to which a stream unites with the one along our route; and  $2\frac{1}{2}$  miles thence reached the *giachug* of Nuldokâr. Grass and firewood were abundant, and the land was cultivated. Here we halted for the night.

263. On the 16th, proceeding  $1\frac{1}{2}$  miles, we reached Arig Gom-pa surrounded by 20 houses where boiling point observations were taken (height 12,480 feet), and 400 paces further we crossed a stream coming from the north. Three-quarters of a mile further a small stream from the north was forded and opposite to its junction a stream from the south-east joined the one along the route.  $\frac{2}{3}$  of a mile thence we reached Ji village where we replenished our stock of provisions.  $1\frac{1}{2}$  miles further on, a stream from the south falls into the main stream. Continuing for  $1\frac{1}{2}$  miles along the right bank, we crossed a small stream from the north, and 1 mile further another from the west. Proceeding thence  $3\frac{1}{2}$  miles and crossing the stream twice in that distance by wooden bridges each 65 paces long, we reached Alâdo *Giachug* with 7 houses and a stage-house. Here we halted for the night.

264. On the 17th, proceeding 500 paces, we crossed a large stream which rising from the Nub Kong pass falls into the one along our route: the united stream then turns to the south, where it is known as the Daksong Chu, and after being joined by the Kongbo Giamda Chu falls into the Tsang-po about 20 miles above Gyâla Sindong (Gyâla and Sengdam). Marching  $7\frac{1}{2}$  miles up the Nub Kong pass stream and passing *en route* 3 tributaries from the right and left,

we arrived at Alagak Giachug, two houses and a stage-house, where we halted for the night. Grass and firewood were abundant.

265. On the 18th September 1882, marching  $7\frac{1}{2}$  miles up the left bank of the stream, which in that distance receives 4 small tributaries from the right and left, we arrived at the Alachiago Giachug, where there are 5 houses and a stage-house. Here we passed the night.

266. On the 19th, we resumed our journey and proceeding 10 miles up the left bank of the stream, we crossed another from the north by a wooden bridge. Within this distance we passed some nomad tents; the stream received 4 small tributaries from the south. Continuing on for 7 miles, we arrived at Alädochug Giachug, 6 houses and a stage-house. There was a scarcity of firewood but grass was abundant. We halted here for the night.

267. On the 20th, after proceeding half a mile we observed a snowy peak bearing  $215\frac{1}{2}^{\circ}$  and distant about  $1\frac{1}{2}$  miles. Marching for 4 miles up stream and up a steep ascent, we gained the pass of Nub Kong where boiling point observations were taken (height 17,040 feet). Here our route entered the district of Lharugo. Descending from the pass for  $1\frac{1}{2}$  miles we reached a small lake whence a stream issued, which 2 miles further flowed through another small lake. Continuing for  $8\frac{1}{2}$  miles along this stream which in this distance receives three tributaries from the right and left, we arrived at the *giachug* of Chachukha, 5 houses, a stage-house and some scattered tents. We stopped here for the night; grass and firewood were procurable.

268. On the 21st, proceeding  $8\frac{1}{2}$  miles down stream which receives two tributaries within that distance, we crossed a pass over a spur by a slight ascent, and descending thence along a stream we reached after  $6\frac{1}{2}$  miles the left bank of the stream before mentioned. Crossing the stream by a bridge 25 paces long and proceeding 800 paces further, we arrived at Lharugo Giachug, where there are 60 houses, a stage-house and a *gom-pa*. It lies between two streams, the one we had followed from the east and another and a larger one from north-west: the united stream hence flows to the south-east. From this *giachug* a road branches off to Lhāsa by the *gom-pa* of Dugong or Digung. We stopped here for two nights. There was a scarcity of grass and firewood. Observations for boiling point were taken here (height 13,690 feet). The general direction of our route from Lho Dzong to this place was westwards.

269. On the 23rd, proceeding 800 paces, we forded the stream from the north-west, 50 paces wide and  $2\frac{1}{2}$  feet deep, and marching for  $7\frac{1}{2}$  miles up a tributary which joins its right bank, we reached a pass named Archa by a steep ascent. Descending  $1\frac{1}{2}$  miles, we observed a snowy peak bearing  $167\frac{1}{2}^{\circ}$  and distant  $7\frac{1}{2}$  miles, and continuing the descent  $1\frac{1}{2}$  miles further, we arrived at Archa Giachug where there are about 12 houses, a *gom-pa* and a stage-house. Three-quarters of a mile further on, we crossed a stream by a bridge 24 paces long, which rising from the Archa lake flows to the south-east. Following up the right bank for  $2\frac{1}{2}$  miles, we arrived opposite the junction of a stream from the north-west, and  $1\frac{1}{2}$  miles further came to the eastern extremity of the lake where we stopped for the night. Observations for boiling point were taken here (height 14,680 feet). Grass and firewood were abundant. The lake is about 4 miles long and  $1\frac{1}{2}$  miles broad, and is fed by three streams from the south and one from the west. The tract of country around affords rich pasturage to herds of cattle belonging to nomads of the neighbourhood.

270. Next day, we proceeded  $3\frac{1}{2}$  miles along the southern margin of the lake and thence ascending its third tributary from the south for  $5\frac{1}{2}$  miles, we forded the stream, 20 paces wide and 2 feet deep. Continuing up a stream joining it from the south for  $5\frac{1}{2}$  miles, which within that distance receives a tributary from the west, we reached Gole Giachug, where there are 3 houses and a stage-house; grass was abundant, but firewood scarce. We stopped here for the night.

271. On the 25th, proceeding up stream  $3\frac{1}{2}$  miles, we reached the pass of To by a steep ascent. Observations for boiling point were taken here (height 17,350 feet). Descending a stream issuing from the pass for  $7\frac{1}{2}$  miles, we reached Donthog Giachug, where we halted for the night. At Donthog there are 7 houses and a stage-house situated near the junction of a small stream from the west with the one along the route. The country between Alagak and Donthog Giachugs is uncultivated.

272. On the 26th September 1882, proceeding down the stream for  $6\frac{1}{2}$  miles, we passed by a *gom-pa* which had 20 houses and some patches of cultivation near it. Continuing on for 7 miles, within which distance the stream received 8 tributaries from the right and left, we arrived at Laru Giachug where we stopped for the night. There were some 25 houses, a stage-house and a *gom-pa* at this *giachug*.

273. The next day, following the stream for 16 miles, in which distance 4 tributaries from the right and left fall into it, we crossed it by a bridge 70 paces long, where a toll of 6 annas is levied from each traveller, and reached the small town of Giamda situated above the

confluence of 2 streams, the one we had followed from the north and another from the west: the joint stream flows to the east and is known as the Kongbo Giamda Chu. The town consists of about 100 small houses with a main street lined by about 200 shops running through it, the shops are kept by Tibetans, Chinese and Nepālese. At Giamda is the mint where Tibetan money is coined. Cultivation is carried on in the vicinity, and wheat, barley and other coarser grains are raised. We stopped here for 2 nights. Observations for boiling point were taken (height 10,900 feet).

274. On the 29th, proceeding  $8\frac{1}{2}$  miles up the stream from the west, and passing *en route* a hamlet, we reached the *gom-pa* of Sāngsar near the junction of a stream from the north-east. Marching thence half a mile, we crossed the stream by a wooden bridge 50 paces long, and continuing our progress for  $5\frac{1}{2}$  miles up the right bank, arrived at Gam Giachug. Within the last distance the stream is fed by 3 small tributaries which join its left bank. At the *giachug* are 10 houses and a stage-house. We halted here for the night.

275. On the 30th, proceeding 12 miles up the right bank of the stream which receives 3 tributaries from the right and left within that distance, we reached the junction of a stream coming from the north-west. Continuing along the same bank for  $6\frac{1}{2}$  miles, and passing *en route* 2 streams, we crossed the stream which here comes from the south, near the junction with it of another from the west. We stopped here for the night.

276. Leaving the next day, and proceeding  $4\frac{1}{2}$  miles up the right bank of the stream from the west, we passed opposite Nimaring Giachug on the left bank of the stream, and 3 miles further we arrived at the confluence of a stream from south-west with that along the route and which here flows from the north-west. Continuing our progress for 8 miles up the stream from south-west, and passing *en route* a small stream from south, we reached the Gia La (pass) by a steep ascent. This pass is on the south-western boundary of the Kongbo district, which latter commences from the To pass. Tibet is divided into three parts; the first called Ngari Khorsum stretches from Ladākh to Ma-yum pass; the second, called U-Tsang, from Ma-yum pass to Gia La, containing Lhāsa, Shigātse &c.; the third called Dokham or Khām, from Gia La, to Ta-chien-lu. Descending  $2\frac{1}{2}$  miles from the pass along a stream rising from it we stopped for the night. Grass was abundant, but there was a scarcity of firewood.

277. On the 2nd October 1882, following the stream for  $7\frac{1}{2}$  miles, which within that distance receives 3 small tributaries from right and left, we arrived at Chomorawa Giachug. 10 houses and a stage-house. We here left the road\* to Lhāsa and took a path named Uri Bār-Khor, which is only trodden by pilgrims from Lhāsa when going round the range of mountains to the south of the city. This pilgrimage is considered so obligatory that even the Great Lama himself has to perform it. Parting company with the trader and proceeding up the right bank of a tributary from south for  $7\frac{1}{2}$  miles and passing *en route* 2 small streams from the east, we gained a pass by a slight ascent. Descending thence for  $2\frac{1}{2}$  miles along the stream which issues from the pass, we found some nomads and remained with them for 2 nights.

278. The nomads here were engaged in burying animals which had died from a certain disease named *Sāndo* supposed to be caused by an insect about half an inch long. The head of this insect is black and its body is of a dull yellowish colour. The insects are common all over Tibet; they swarm under grass which for a distance around becomes so dangerous that any animal that grazes on it is at once attacked by fever which almost always proves fatal. The fever afterwards becomes contagious and attacks other animals and even the men who herd them or eat their flesh. We were told that all animals which die of this disease are found with their heads towards the north and their tails crooked. Persons who suffer from it are first attacked by fever followed by boils which appear under the armpits and in the elbow and knee-joints. Very few animals or persons recover from it. The only measure adopted by the inhabitants is one of a precautionary nature; they eat scorched insects, which fortifies their system against the poisonous effects of the living ones. These insects are not easily discovered, as they remain always hidden under the grass, and the only time for unearthing them is winter, at which season the place where they exist is found free from snow. People put on the spot a large copper vessel turned downwards and kindle a fire over and around it: after a time the vessel is removed when a number of these insects are found scorched underneath. One such insect is given to a man. They are also given to animals, mixed with salt.

279. On the 4th October 1882, proceeding 10 miles along the stream we arrived at the *gom-pa* of Jingcho, where cultivation was seen. From the pass to this *gom-pa* the stream receives 5 small tributaries from the right and left. Continuing for  $3\frac{1}{2}$  miles along the stream, we crossed

\* There are four *giachugs*, viz., Whosarsang (Kuzer), Rin-chen-ling, Medu Kongkar, De-chen on this road between Chomorawa and Lhāsa.

it by a wooden bridge 25 paces long, and half a mile further on passed Kānadeba, where there were two large three-storied houses, the residence of some rich persons. Marching thence for  $1\frac{1}{4}$  miles along the stream, we reached the fort of Hoka (Horga) surrounded by about 250 houses, and there halted for the night.

280. On the 5th, a quarter of a mile from the fort, we crossed the stream which a little lower down joins another named Mik Chu coming from the north-east and flowing to the south-west towards the Tsang Chu or Tsang-po river. Marching thence for  $4\frac{1}{2}$  miles we ascended a spur whence we observed two snowy peaks, bearing  $134\frac{1}{2}^{\circ}$  and  $156\frac{1}{2}^{\circ}$ , distant  $4\frac{1}{2}$  and 8 miles respectively. Descending for 4 miles along a stream we arrived at the village of Yachu near the junction of a stream named Yachu coming from the north. Having crossed this stream, which also joins the Mik Chu, by a wooden bridge 30 paces long, and ascended for  $3\frac{1}{2}$  miles, we arrived at another pass over a spur, and thence descending  $2\frac{1}{2}$  miles we reached the hamlet of Khātha containing 5 houses, situated on the left bank of the Tsang-po, where we stopped for the night. The general direction of our route from the Lharugo Giachug to this hamlet is south-west: it was wide throughout but generally rugged and stony. Observations for boiling point were taken here (height 11,260 feet). The Tsang-po which rises near the Manasarowar lake is called by different names in various places: in Ngari Khorsum it is named Tamjan-Khamba; in the Tsang district Nari-chu, and in some part of the district of Lhokha which extends from the Gia La to the Kong-ka Dzong (fort), it is named Tsang Chu or Tsang-po. The general direction of the river is eastwards: the force of its current a little below Khātha is very strong. In its further course it receives contributions from innumerable streams and water-courses which take their rise from the southern and western slopes of that portion of the range which lies between the Ata Gang pass on the east and the Gia La (pass) on the west. It is said that the river finally inclines to the south and receiving a tributary of nearly half its dimension from the east named the Zayul Chu, flows into India.

281. On the 6th, proceeding  $5\frac{1}{2}$  miles up the left bank of the river, we crossed a small stream coming from the north-east and 3 miles further, arrived at the *gom-pa* of Zangri Khammedh surrounded by 20 houses. Proceeding thence 1 mile we reached the fort of Zangri Dzong surrounded by 30 houses and situated near a tributary of the river. About 3 miles to the south and on the right bank of the river is Shikhār Dzong fort surrounded by 35 houses. From Zangri Dzong the road leaves the river and ascending the hills on the right for  $4\frac{1}{2}$  miles reaches Daisithi Gom-pa, a place of pilgrimage. There are about 40 houses near this *gom-pa*. We halted here for the night.

282. The next day, descending  $2\frac{1}{2}$  miles and thence following the left bank of the river  $7\frac{1}{2}$  miles, we reached the *gom-pa* of Hon-Ngari Thanjang (Naridāchāng). It is a large high building on an isolated mound; the latter has about 200 houses around it. Grass and fuel are procurable. We halted here for the night.

283. On the 8th, marching  $1\frac{1}{2}$  miles we came to a stream that falls into the Tsang-po from the north: here we crossed the river, which is 200 paces wide and very deep. On the right bank of the river is Niāko Dukha (ferry), where there is a large house belonging to the owners of the boats. There was formerly an iron bridge at this place which I was told was destroyed by lightning. Proceeding 3 miles from the ferry we arrived at Tsetang, a large town containing 1,000 houses, a *bāzār*, a *gom-pa* and a fort. From here a route branches off to Lhāsa, by way of Samaye and Dechen Dzong, which latter is about 45 miles from this town. Boiling point observations were taken at Tsetang (height 11,480 feet). We halted here for 3 nights.

284. On the 11th October 1882, proceeding up the right bank for a mile, we crossed a tributary of the river. Marching thence  $1\frac{1}{2}$  miles, we passed the temple of Chyasa (Chense) Lhakang and about  $1\frac{1}{2}$  miles further on, arrived opposite Gerpa Duga ferry (Gāba Dukha). 2 miles higher up is the village of Dhomda (Tānda) on the left bank of the river. Continuing on for  $14\frac{1}{2}$  miles we arrived opposite the *gom-pa* of Samaye, bearing  $13^{\circ}$  and distant  $4\frac{1}{2}$  miles. Samaye is a large *gom-pa* surrounded by 1,000 houses and shops.

285. The next day we reached the hamlet of Dushio, 2 miles from our halting place, and about the same distance further a stream from the north joined the river. Proceeding  $1\frac{1}{2}$  miles we visited Chinduchoka Gom-pa, in the vicinity of which were 10 houses, and  $3\frac{1}{2}$  miles thence we passed the *gom-pa* of Jera and the *churtan* of Jiambāling, the former of which was about 1 mile to the south and the latter 3 miles south-east of the route. Continuing on for 15 miles along the right bank of the river we arrived at Chitishio Dzong (fort) where there are about 1,000 houses, a fort and a small *bāzār*. This place is well known on account of the woollen cloth manufactured. We halted here for the night.

286. On the 13th, proceeding along a spur for  $2\frac{1}{2}$  miles, we observed the *gom-pa* of Dorje-thag, bearing  $42\frac{1}{2}^{\circ}$  and distant  $2\frac{1}{2}$  miles. This *gom-pa* is situated on the left bank of the

river and is surrounded by about 100 houses. Marching 4 miles further we reached Taishion village and  $1\frac{1}{2}$  miles thence the village of Chishio. Half a mile onward we passed the large *gom-pa*, called Ra-medh, surrounded by 100 houses, and  $2\frac{1}{2}$  miles thence we arrived at the temple of Nianga Lhakang. Continuing our journey up the right bank of the river for 9 miles, we reached the *churtan* of Kong-ka, near which were some 200 houses, and  $1\frac{1}{2}$  miles further we passed the Kong-ka Dzong (fort), surrounded by 600 houses. 2 miles further on is the hamlet of Lhāsang and  $1\frac{1}{2}$  miles still further that of Kīna where we stopped for the night. About a mile to north-east of the last hamlet is the Kyi Chu which flowing from north-east joins the Tsang Chu (Tsang-po). Boiling point observations were taken at Kīna (height 10,510 feet).

297. On the 15th, ascending  $1\frac{1}{2}$  miles to a spur we observed 2 snowy peaks, bearing  $263\frac{1}{2}^{\circ}$  and  $259\frac{1}{2}^{\circ}$ , distant 21 miles each, and descending thence for  $1\frac{1}{2}$  miles, we arrived at the village of Jiang-thang, containing 10 houses. Proceeding  $4\frac{1}{2}$  miles further the route diverged from the Tsang Chu which comes from the west. The general direction of the route from the hamlet of Khātha to this place was to the west and along the bank of the river which in this portion of its course has a very slow current. Turning hence to the south and proceeding for half a mile, we arrived at Kam-pa-par-tse stage-house, which we had visited when going to Lhāsa some 4 years ago. We ended our route-survey here as this place was fixed by Pandit Nain Singh. Leaving Kam-pa-par-tse we arrived at Darjeeling on 12th November. In this portion of the route we suffered severely on account of heavy snow.

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TABLE I. *Abstract of Latitudes from Observations with a Sextant and Mercurial Horizon.*

Year and Date of Observation	Station and District	Direct distance between consecutive stations	Name of Star	No. of Observations	Latitude by each Star		N - S	Mean resulting Latitude	REMARKS
					North of Zenith or N	South of Zenith or S			
1879 June 27	Lhāsa, Bhānāghio Street	...	α Scorpii ( <i>Asteres</i> )	1	...	29 38 13	...	29 39 0	
" September 20	Chamchunang vil. on right bank of the Migī, District Phonda	45	α Pis. Aus. ( <i>Fomalhaut</i> )	1	...	30 15 42	...		
" " "	Ditto	...	α Ursa Minoris ( <i>Polaris</i> ) Upper	1	30 17 18	...	...		
" " "	Yar Khorchen, District Dam	17	β Ceti	1	30 17 18	30 15 42	+ 1 36	30 16 30	
" " "	Shiabden Gom-pa, District Nāg Chau Kha	74	α Ursa Minoris ( <i>Polaris</i> ) Upper	2	31 29 15	...	...	30 30 55	
" " "	Ditto ditto	...	α Aquilae ( <i>Altair</i> )	1	...	31 27 16	...		
" October 4	Ditto ditto	...	α Pis. Aus. ( <i>Fomalhaut</i> )	1	...	28 1	...		
" " "	Khamlung E. G., District Jāma	34	α Ursa Minoris ( <i>Polaris</i> ) Upper	1	31 29 15	31 27 39	+ 1 36	31 28 27	
" " "	Maurusen Khua E. G.,	128	α Pis. Aus. ( <i>Fomalhaut</i> )	1	31 28 31	...	...	31 57 44	
" " "	Ditto	...	α Ursa Minoris ( <i>Polaris</i> ) Upper	1	33 49 6	33 47 44	...		
" " "	Ditto	107	α Ursa Minoris ( <i>Polaris</i> ) Upper	1	33 49 6	33 47 44	+ 1 23	33 48 25	

NOTE.—E. G. stands for Encamping Ground.

TABLE I.—Abstract of Latitudes from Observations with a Sextant and Mercurial Horizon.—(Continued).

Year and Date of Observation	Station and District	Direct distance between consecutive stations	Name of Star	No. of Observations	Latitude by each Star		N-S	Mean resulting Latitude	REMARKS
					North of Zenith or N	South of Zenith or S			
1879 October 19	Koko-shili E. G.	...	$\beta$ Ceti ...	1	° ' "	° ' "	' "	° ' "	
" "	Ditto	...	$\alpha$ Ursa Minoris (Polaris) Upper ...	1	35 11 36	35 9 38			
		34			35 11 36	35 9 38	+ 1 58	35 10 37	
" 25	Angirtakchia E. G.	...	$\alpha$ Pis. Aus. (Fomalhaut)	1		35 32 39			
" "	Ditto	...	$\beta$ Ceti ...	1		33 6			
" "	Ditto	...	$\alpha$ Ursa Minoris (Polaris) Upper ...	1	35 34 16				
		23			35 34 16	35 32 53	+ 1 23	35 33 35	
" November 29, 30 } 1, 2 }	Naichi M. C., District Naichi	...	$\alpha$ Ursa Minoris (Polaris) Upper ...	4	35 53 8				
" October 30	Ditto	...	$\alpha$ Canis Majoris (Sirius)	1		35 51 14			
" "	Ditto	...	$\alpha$ Canis Minoris (Procyon)	1		51 6			
" November 31 } 1, 2 }	Ditto	...	Sun (Both Limbs) ...	3		51 43			
" October 31	Ditto	...	$\alpha$ Pis. Aus. (Fomalhaut)	1		51 41			
" November 1	Ditto	...	$\beta$ Ceti ...	1		53 1			
" 2	Ditto	...	$\beta$ Orionis (Rigel)	1		51 29			
		55			35 53 8	35 51 32	+ 1 36	35 52 30	

NOTE.—N. O. stands for Nomad Camp.



TABLE I.—*Abstract of Latitudes from Observations with a Sextant and Mercurial Horizon.*—(Continued).

Year and Date of Observation	Station and District	Direct distance between consecutive stations	Name of Star	No. of Observation	Latitude by each Star		N—S	Mean resulting Latitude	REMARKS
					North of Zenith or N	South of Zenith or S			
1879 Nov.	Golmo N. C., District Tschinar	Miles	$\alpha$ Pis. Aus. ( <i>Fomalhaut</i> )	7	° ' "	36 24 38	' "	° ' "	
"	Ditto		$\alpha$ Ursæ Minoris ( <i>Polaris</i> ) Upper	9	36 26 7				
"	Ditto		$\beta$ Ceti	8		24 47			
"	Ditto		$\alpha$ Orionis	3		24 9			
"	Ditto		$\alpha$ Canis Majoris ( <i>Sirius</i> )	3		24 8			
"	Ditto		$\alpha$ Canis Minoris ( <i>Procyon</i> )	3		24 17			
"	Ditto		$\beta$ Orionis ( <i>Rigel</i> )	3		24 54			
"	Ditto				36 26 7	36 24 29	+ 1 38	36 25 18	
1879 December	Tengelik, District Tschinar	59	$\alpha$ Pis. Aus. ( <i>Fomalhaut</i> )	5		36 23 38			
"	Ditto		$\beta$ Ceti	5		28 20			
"	Ditto		$\alpha$ Ursæ Minoris ( <i>Polaris</i> ) Upper	6	36 25 24				
"	Ditto		$\beta$ Orionis ( <i>Rigel</i> )	3		23 37			
"	Ditto		$\alpha$ Canis Majoris ( <i>Sirius</i> )	3		23 30			
"	Ditto		$\alpha$ Canis Minoris ( <i>Procyon</i> )	1		23 5			
"	Ditto		$\alpha$ Orionis	1		23 23			
"	Ditto				36 25 24	36 23 26	+ 1 58	36 24 25	
		67							

TABLE I.—Abstract of Latitudes from Observations with a sextant and Mercurial Horizon.—(Continued).

Year and Date of Observation	Station and District	Direct distance between consecutive stations	Name of Star	No. of Observations	Latitude by each Star		N—S	Mean resulting Latitude	REMARKS
					North of Zenith or N	South of Zenith or S			
1879 December 22, 30, 31 } 1880 January 5, 7, 8, 9 }	Sukhai N. C., District Korluk	...	α Ursa Minoris (Polaris) Upper ...	7	37 18 21	...	' "	' "	
1879 December 23, 31 } 1880 Jan. 4, 5, 7, 8, 9, 11, 25 }	Ditto	...	β Orionis (Rigel) ...	11	...	37 16 31	' "	' "	
" February 7, 14 } 1879 December 28, 31 }	Ditto	...	α Canis Majoris (Sirius) ...	6	...	16 33	' "	' "	
1880 January 6, 7 } " February 7, 8 }	Ditto	...	β Ceti ...	2	...	16 35	' "	' "	
1879 December 30, 31 } 1880 January 6, 7 }	Ditto	...	α Orionis ...	3	...	17 12	' "	' "	
" February 7 }	Ditto	...	α Canis Minoris (Procyon) ...	1	...	16 15	' "	' "	
" January 7	Ditto	...	α Ursa Minoris (Polaris) Lower ...	2	17 49	...	' "	' "	
" " 28, February 7	Ditto	...	α Orionis ...	1	...	17 28	' "	' "	
" February 14	Ditto	...	β Ursa Minoris, Upper ...	1	17 48	...	' "	' "	
" "	Ditto	...	...	...	37 17 59	37 16 46	+ 1 13	37 17 23	
1880 March 1, 12	Hoiduthava vil, District Korluk	4	α Canis Majoris (Sirius) ...	2	...	37 19 43	' "	' "	
" " 9	Ditto	...	β Ursa Minoris, Upper ...	1	37 20 35	...	' "	' "	
" " 12	Ditto	...	α Canis Minoris (Procyon) ...	1	...	20 9	' "	' "	
" " 13	Ditto	...	α Ursa Minoris (Polaris) Lower ...	1	21 41	...	' "	' "	
		216	...	...	37 21 8	37 19 56	+ 1 12	37 20 32	



TABLE I.—Abstract of Latitudes from Observations with a Sextant and Mercurial Horizon.—(Continued).

Year and Date of Observation	Station and District	Direct distance between consecutive stations	Name of Star	No. of Observation	Latitude by each star		N-S	Mean resulting Latitude	REMARKS
					North of Zenith or N	South of Zenith or S			
1882 February	Nagchukha on left bank of Nag Chu river, District Nagchukha	Miles	$\alpha$ Canis Minoris ( <i>Procyon</i> )	1	° ' "	30 1 35	' "	° ' "	
"	Ditto		$\alpha$ Virginis ( <i>Spica</i> )	1		0 28			
"	Ditto		$\beta$ Ursæ Minoris, Upper	1	30 8 33				
		112			30 3 83		+ 2 31	30 2 18	
" March	Chioti Gom-pa, District Ba-tang	34	$\alpha$ Canis Majoris ( <i>Sirius</i> )	1		30 0 5			
"	Ditto		$\alpha$ Canis Minoris ( <i>Procyon</i> )	1		29 59 20			
						29 59 43		30 0 30	
"	Gartok or Mākham, District Mākham	40	$\alpha$ Virginis ( <i>Spica</i> )	1		29 39 58			
"	Ditto		Sun (Upper Limb)	1		40 41			
						29 40 20		29 41 7	
" April	Dayul Gom-pa, District Dayul		Sun (Upper Limb)	1		29 11 26		29 12 13	
				Index	Correction	Mean = $\frac{1}{2}$ Mean	+ 1 34 $\pm$ 0 47	... ..	South for North

NOTE.—The latitude by each star was obtained after applying the Index Error of the Sextant as determined at each station; a residual Index Error appears however to remain, and twice this error is shown in the column N-S: this has been assumed to be eliminated in the mean result at all stations where both North and South objects were observed: where the objects had only one of these aspects, the correction of  $\pm 47''$  to  $\frac{\text{South}}{\text{North}}$  latitudes has been applied in determining the mean results.

TABLE II. *Heights above sea-level deduced from Boiling Point Observations.*

Place and District.	Height in feet	Place and District.	Height in feet
Lhāsa,* Bhānāghio Street ...	126,00	Station on hills about 3 miles S. of Ta-chien-lu, District Minia ...	8,930
Pen-po-go Pass, District Pen-po ..	16,320	Gi Pass, District Minia ...	14,690
Cha Pass ...	15,840	Kashi La ...	14,710
Phondu on right bank of Rong River ...	13,340	Nagchukha on left bank of Nag Chu River, District Nagchukha ...	8,410 <sub>6</sub>
Chamchunang vil. on right bank of Mig River, District Phondu ...	13,230	Li tang, District Li-tang ...	13,400 <sub>2</sub>
Marnio Pass, District Reting ...	14,900	Gara La Do. ...	15,400
Lani Pass ...	15,750	Kathi Pass ...	15,340
Yar Khorehen, District Dam ...	14,400 <sub>2</sub>	Chioti Gom-pa, District Ba-tang ...	8,160 <sub>2</sub>
Shiabden Gom-pa, District Nāg Chu Kha ...	14,930 <sub>6</sub>	Dubāna Ferry, left bank of the Di Chu, District Ba-tang ...	7,700
Khamlung E. G., District Jāma ...	15,050	Gartok or Mākham, District Mākham ...	11,920
Giaro E. G. on left bank of Saung Chu Dis- trict Yāgra ...	14,540	Samba Dukha Ferry, left bank of Chiamdo Chu District Mākham ...	9,450
Yagratodh E. G., District Yāgra ...	14,950	Cha Churtan, District Dayul ...	10,640 <sub>2</sub>
Tang Pass, Do. ...	16,380	Dayul Gom-pa Do. ...	11,450
Atag-hapchiga E. G. ...	15,080	Thangshu Dukha Ferry, left bank of the Grama Nu Chu, District Nu Chu Giu ...	7,160 <sub>2</sub>
Maurusen Khua E. G. ...	14,230	Tila Pass ...	16,110
Maurus River, Left bank ...	14,660	Station on left bank of Zayul Chu, near Drowa Gom-pa, District Zayul ...	8,300
Ulangmiris River, Left bank ...	14,640	Shika in Rima vil., District Zayul ...	4,650 <sub>2</sub>
Koko-shuli E. G. ...	13,430	Sonling vil., District Zayul ...	6,200
Chu Mar River, Right bank ...	14,040	Ata vil., Do. ...	7,950
Do. Left bank ...	14,050	Ata Gang Pass Glacier; station near Pass ...	14,690
Angirtakchia E. G. ...	13,690	Shiuden Gom-pa, District Nagong ...	13,650
Naichi N. C., District Naichi ...	12,010 <sub>11</sub>	Dongear, District Dainai ...	13,850
Shiārthoge N. C., Do. ...	10,370 <sub>2</sub>	Giok Jam Bridge, left bank of stream, District Pasuu ...	11,040
Golmo N. C., District Taichinar ...	8,790 <sub>24</sub>	Lho Dzong, District Lho Dzong ...	13,140
Tengelik Do. ...	7,720 <sub>11</sub>	Shobando, District Jithong ...	12,470
Sukhai N. C., District Korluk ...	8,770 <sub>74</sub>	Arig Gom-pa, District Arig ...	12,480
Hoiduthara vil., Do. ...	9,200 <sub>2</sub>	Nub Kong Pass ...	17,940
Ikhe Tsaidam on N. bank of lake, District Koriuk ...	10,480 <sub>2</sub>	Lharugo Giachug, District Lharugo ...	13,690
Yembi, District Korluk ...	9,690 <sub>16</sub>	Archa Lake, S. E. bank, District Lharugo ...	14,680
Thuden Gom-pa, District Derge ...	11,990 <sub>4</sub>	To Pass ...	17,350
Churtan Kārpo on left bank of Di Chu, Dis- trict Derge ...	11,440	Giamda, District Kongbo ...	10,900
Kegudo, District Derge ...	11,860 <sub>2</sub>	Khātha vil. on left bank of Tsang Chu or Tsang-po River, District Lhokha ...	11,260
Sila vil. on left bank of Di Chu, Dist. Derge	10,390	Tsetang* Bāzār, District Lhokha ...	11,450
Dolma Lhakang on left bank of Di Chu, Dis- trict Derge ...	10,930	Kina vil. on right bank of Tsang Chu or Tsang-po River, District Lhokha ...	10,510
Ringo vil., District Rongbacha ...	10,550		
Ta-chien-lu Bāzār on left bank of stream, Dis- trict Minia ...	8,310 <sub>2</sub>		

NORM.—The heights here given are to the nearest 10 feet, where a subscript is added it signifies the number of boiling point readings from which the height has been obtained. E. G. stands for Encamping Ground and N. C. for Nomad Camp.

\* The heights of these two places, as given on the Map, are Pandit Nain Singh's values, determined in 1873-75, i.e. Lhāsa 11,910 feet and Tsetang 11,480 feet.

TABLE III.—*Observations of Temperature of the Air.*

BHANAGSHIO STREET, LHASA.

Date	6 A.M.		9 A.M.		Noon		3 P.M.		6 P.M.	
	Temperature Fahr.	REMARKS	Temperature Fahr.	REMARKS	Temperature Fahr.	REMARKS	Temperature Fahr.	REMARKS	Temperature Fahr.	REMARKS
1879 June 5	Degrees ...	...	Degrees ...	...	Degrees 68.4	Clear; S.W. wind	Degrees 72.4	Clear; S.W. wind	Degrees ...	...
" 6	"	...	60.4	Clear; W. wind	70.9	Clear; W. wind	76.4	Cloudy; W. wind	73.9	Cloudy; W. wind
" 7	53.9	Clear; S.W. wind	59.7	Clear; S.W. wind	...	...	...	...	...	...
" 8	55.4	Clear; S.E. wind	61.4	Clear; S.E. wind	70.9	Clear; S.E. wind	...	...	...	...
" 11	...	...	...	...	75.9	Clear; W. wind	...	...	...	...
" 12	...	...	...	...	...	...	77.4	Cloudy; W. wind	...	...
" 13	49.7	Clear; S.E. wind	65.9	Clear; S.E. wind	74.4	Cloudy; S. wind	73.9	Cloudy; slight drizzle; strong S. wind	71.4	Clear; S.W. wind
" 14	54.9	Clear; W. wind	69.4	Clear; W. wind	76.6	Cloudy; W. wind	77.4	Cloudy; W. wind	74.4	Cloudy; W. wind
" 15	50.7	Cloudy; S.E. wind; rain last night	69.4	Cloudy; S. wind	74.9	Clear; S. wind	76.4	Clear; S. wind	69.4	Clear; S. wind
" 16	48.4	Clear; S.E. wind	58.4	Clear; S.E. wind	65.9	A few clouds; S.E. wind	68.4	A few clouds; S.E. wind	62.4	Clear; S.E. wind
" 17	49.9	Clear; E. wind	59.4	Clear; E. wind	66.9	Clear; E. wind	69.2	Clear; E. wind	63.9	Clear; E. wind
" 18	50.4	A few clouds; S.E. wind	59.4	A few clouds; S.E. wind	69.4	A few clouds; S.E. wind	74.4	A few clouds; S.E. wind	68.4	A few clouds; S.E. wind
" 19	54.4	Cloudy; E. wind	59.4	Cloudy; E. wind	68.4	Cloudy; S.E. wind	70.4	Cloudy; S.E. wind	68.4	Cloudy; S.E. wind
" 20	52.4	Cloudy; E. wind	56.9	Cloudy; E. wind	68.4	Cloudy; E. wind	71.4	Cloudy; E. wind	68.4	Cloudy; E. wind
" 21	50.9	Cloudy; S. wind; rain last night	56.4	Cloudy; S. wind	65.4	Cloudy; S. wind	71.4	Cloudy; S. wind	67.4	Clear; S. wind
" 22	54.4	A few clouds; calm; rain last night	57.9	Very cloudy; calm	64.4	A few clouds; E. wind	72.4	A few clouds; E. wind	67.4	A few clouds; E. wind

TABLE III.—*Observations of Temperature of the Air—(Continued).*

BHANAGSHIO STREET, LHASA.

Date	6 A.M.		9 A.M.		Noon		3 P.M.		6 P.M.	
	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS
1879 June 23	Degrees 56·4	Clear; S.E. wind	Degrees 66·4	Clear; S.E. wind	Degrees 74·4	Clear; S.E. wind	Degrees 77·4	Cloudy; raining; S.E. wind	Degrees 70·4	Very cloudy; raining; S.E. wind
" 24	55·4	A few clouds; E. wind	57·4	A few clouds; E. wind	67·4	A few clouds; E. wind	74·4	Cloudy; drizzling; E. wind	68·4	A few clouds; E. wind
" 25	51·4	Cloudy; E. wind	58·4	Cloudy; calm	65·4	Cloudy; calm	68·4	Cloudy; N.E. wind	62·4	Cloudy; raining; N.E. wind
" 26	49·4	Cloudy; raining N.W. wind	52·9	Cloudy; N.W. wind	64·4	A few clouds; W. wind	66·4	A few clouds; W. wind	58·4	Cloudy; raining; W. wind
" 27	53·4	Cloudy; calm	61·4	Cloudy; W. wind	66·4	Cloudy; W. wind	69·4	Cloudy; W. wind	62·4	Raining; W. wind
" 28	49·4	A few clouds; N. wind	51·4	A few clouds; N. wind	62·4	Clear; N. wind	64·4	Clear; N. wind	62·4	Cloudy; calm
" 29	51·4	A few clouds; N. wind	60·4	A few clouds; N. wind	65·4	A few clouds; N. wind	68·4	Clear; N. wind	64·4	Clear; N. wind
" 30	51·9	Clear; E. wind	59·4	Clear; E. wind	66·4	Cloudy; calm	70·4	Cloudy; E. wind	65·4	Cloudy; E. wind
July 1	53·9	Cloudy; mild E. wind	61·4	Cloudy; N. wind	69·4	Cloudy; N.W. wind	71·4	Cloudy; N.W. wind	69·4	Cloudy; N.W. wind
" 2	50·9	Raining; W. wind	68·9	Raining W. wind	71·4	Cloudy; W. wind	74·4	Cloudy; W. wind	69·4	Cloudy; W. wind
" 3	52·4	A few clouds; W. wind; rain last night	63·4	A few clouds; W. wind	73·4	A few clouds; W. wind	77·4	Cloudy; W. wind	67·4	Raining; W. wind
" 4	49·4	Cloudy; E. wind	54·4	Cloudy; E. wind	65·9	Cloudy; E. wind	74·9	Cloudy; E. wind	65·4	Raining; E. wind
" 5	51·4	Cloudy; S.E. wind	54·9	Cloudy; S.E. wind	64·9	Cloudy; S.E. wind	70·9	Cloudy; S.E. wind	64·4	Cloudy; S. wind
" 6	53·4	Cloudy; calm	55·9	Cloudy; S.E. wind	64·4	Cloudy; S.E. wind	66·4	Cloudy; S.E. wind	60·4	Cloudy; S.E. wind
" 7	51·4	A few clouds; S. wind	56·4	A few clouds; S. wind	77·4	A few clouds; S. wind	70·9	A few clouds; S. wind	64·4	A few clouds; S. wind
" 8	51·4	Clear; E. wind	63·4	Clear; E. wind	68·4	A few clouds; E. wind	70·4	A few clouds; E. wind	65·4	Clear; E. wind

TABLE III.—*Observations of Temperature of the Air.*—(Continued).

BHANAGSHIO STREET, LHASA.

Date	6 A. M.		9 A. M.		Noon		3 P. M.		6 P. M.	
	Temperature F. H.	REMARKS	Temperature F. H.	REMARKS	Temperature F. H.	REMARKS	Temperature F. H.	REMARKS	Temperature F. H.	REMARKS
1879 July 9	Degrees 53·4	Clear; N. W. wind	Degrees 64·4	Clear; N. W. wind	Degrees 69·4	A few clouds; N. wind	Degrees 72·4	A few clouds; N. wind	Degrees 64·4	Hailstorm; N. wind
" 10	57·4	Cloudy; mild N. wind	60·4	Cloudy; N. wind	68·4	Cloudy; N. wind	74·4	Cloudy; N. wind	65·4	Cloudy; N. wind
" 11	53·9	Cloudy; E. wind; rain last night	63·4	Cloudy; E. wind	64·4	Cloudy; E. wind	71·9	Cloudy; E. wind	67·4	Cloudy; E. wind
" 12	51·4	Cloudy; calm; rain last night	56·4	Cloudy; E. wind	69·4	Cloudy; E. wind	74·4	Cloudy; E. wind	66·4	Cloudy; E. wind
" 13	49·4	Cloudy; S. wind; rain last night	52·4	Cloudy; S. wind	64·4	Cloudy; S. wind	69·4	Cloudy; S. wind	63·4	Cloudy; S. wind
" 14	52·4	Cloudy; calm	56·4	Cloudy; N. E. wind	67·4	Cloudy; N. E. wind	71·4	Cloudy; N. E. wind	63·9	Cloudy; N. E. wind
" 15	49·4	Cloudy; calm; rain last night	52·4	Cloudy; S. E. wind	66·9	Cloudy; S. E. wind	69·9	Cloudy; S. E. wind	63·9	Cloudy; S. E. wind
" 16	54·4	Cloudy; E. wind	57·4	Cloudy; E. wind	64·9	Cloudy; E. wind	72·4	Cloudy; E. wind	64·4	Cloudy; calm
" 17	57·4	Cloudy; calm	59·4	Cloudy; W. wind	67·9	Cloudy; W. wind	73·4	Cloudy; W. wind	66·4	Cloudy; W. wind
" 18	54·4	Cloudy; calm	57·4	Cloudy; N. wind	67·4	Cloudy; N. wind	69·4	Cloudy; N. wind	67·4	Cloudy; N. wind
" 19	53·4	Cloudy; W. wind	57·4	Cloudy; W. wind	64·4	Cloudy; W. wind	69·4	Cloudy; W. wind	67·4	Raining; W. wind
" 20	51·4	Cloudy; S. W. wind	57·4	Cloudy; S. W. wind	64·4	Cloudy; S. W. wind	67·4	Cloudy; S. W. wind	66·4	Cloudy; S. W. wind
" 21	50·9	Cloudy; N. wind; rain last night	56·4	Cloudy; N. wind	64·9	Cloudy; N. wind	66·4	Cloudy; N. wind	64·4	Cloudy; N. wind
" 22	48·9	Cloudy; E. wind; rain last night	53·4	Cloudy; E. wind	64·4	Cloudy; E. wind	66·4	Cloudy; W. wind	64·4	Cloudy; W. wind
" 23	49·4	Cloudy; W. wind	56·4	Cloudy; W. wind	64·4	A few clouds; W. wind	66·4	A few clouds; W. wind	64·4	A few clouds; W. wind



TABLE III.—*Observations of Temperature of the Air.—(Continued).*

BHANAGSHIO STREET, LHASA.

Date	6 A. M.		9 A. M.		NOON		3 P. M.		6 P. M.	
	Temperature Fahr.	REMARKS.	Temperature Fahr.	REMARKS	Temperature Fahr.	REMARKS	Temperature Fahr.	REMARKS	Temperature Fahr.	REMARKS
1879										
July 24	Degrees 51·4	A few clouds; W. wind	Degrees 56·4	A few clouds; W. wind	Degrees 66·4	A few clouds; W. wind	Degrees 68·4	A few clouds; W. wind	Degrees 65·4	A few clouds; W. wind
" 25	50·9	A few clouds; E. wind	64·4	A few clouds; E. wind	66·4	A few clouds; E. wind	69·4	A few clouds; E. wind	65·4	A few clouds; E. wind
" 26	51·4	A few clouds; E. wind	65·9	A few clouds; W. wind	67·4	A few clouds; W. wind	70·9	A few clouds; W. wind	66·4	A few clouds; W. wind
August 27	55·4	A few clouds; S. wind	61·4	A few clouds; S. wind	64·4	A few clouds; S. wind	...	...	...	...
" 28	51·4	Very cloudy; S.W. wind	57·4	Cloudy; W. wind	60·9	Cloudy; W. wind	63·9	Cloudy; W. wind	58·4	Cloudy; W. wind
September 4	49·4	Cloudy; calm	53·4	Cloudy; N. wind	65·5	Cloudy; N. wind	66·4	A few clouds; N.E. wind	61·9	A few clouds; N.E. wind
GOLMO, DISTRICT TAICHINAR.										
November 11	...	...	...	...	...	...	...	...	41·9	Clear; N.E. wind
" 12	...	...	30·4	A few clouds; S.W. wind	43·9	Very cloudy; S.W. wind	45·4	Cloudy; S.W. wind	...	...
" 13	...	...	34·9	A few clouds; W. wind	43·9	Very cloudy; W. wind	45·4	Cloudy; W. wind	...	...
" 14	...	...	37·4	Clear; W. wind	47·4	Clear; W. wind	50·9	Clear; W. wind	...	...
" 15	...	...	32·4	Clear; N.W. wind	46·3	Clear; W. wind	50·4	Clear; W. wind	...	...
" 16	...	...	31·4	A few clouds; S.W. wind	47·9	A few clouds; S.W. wind	50·4	A few clouds; S.W. wind	...	...
" 17	...	...	26·9	Cloudy; W. wind	43·4	A few clouds; W. wind	45·4	Clear; W. wind	...	...
" 18	...	...	34·4	Clear; E. wind	41·4	Clear; N.E. wind	44·9	Clear; E. wind	...	...
" 19	...	...	33·9	Clear; W. wind	41·4	Clear; W. wind	44·4	Clear; W. wind	...	...
" 20	...	...	27·9	Clear; mild W. wind	38·9	Clear; mild W. wind	43·4	Clear; mild W. wind	...	...

TABLE III.—*Observations of Temperature of the Air.*—(Continued).

## TENGELIK, DISTRICT TAICHINAR.

Date	6 A.M.		9 A.M.		Noon		3 P.M.		6 P.M.	
	Temperature Fah.	Remarks	Temperature Fah.	Remarks	Temperature Fah.	Remarks	Temperature Fah.	Remarks	Temperature Fah.	Remarks
1879 November 28	Degrees ...	...	Degrees 27.4	Clear; S.E. wind	Degrees 30.3	Clear; N.E. wind	Degrees 36.4	Clear; N. wind	Degrees ...	...
" 29	...	...	24.9	Clear; high S.E. wind	33.4	Clear; high S.W. wind	32.9	Cloudy; high S.W. wind	...	...
" 30	...	...	26.9	Clear; S.E. wind	36.4	Clear; E. wind	33.9	Clear; E. wind	...	...
December 1	...	...	21.9	Clear; high W. wind	29.4	A few clouds; high W. wind	31.9	A few clouds; high W. wind	...	...
" 2	...	...	23.4	Clear; W. wind	27.9	Clear; W. wind	39.9	Clear; W. wind	...	...
" 3	...	...	26.4	Clear; high E. wind	33.4	Clear; high E. wind	41.4	Clear; E. wind	...	...
" 4	...	...	25.9	Very cloudy; high W. wind	27.4	A few clouds; high W. wind	39.4	Clear; high W. wind	...	...
" 5	...	...	29.4	A few clouds; high E. wind	34.9	Cloudy; S.E. wind	34.9	Cloudy; W. wind	...	...
" 6	...	...	31.4	A few clouds; N.E. wind	26.9	A few clouds; N. wind	39.4	Clear; N. wind	...	...
" 7	...	...	26.9	Clear; high E. wind	24.9	Clear; strong N.E. wind	33.9	Clear; strong N.E. wind	...	...
" 8	...	...	25.4	Clear; W. wind	31.4	Clear; W. wind	36.4	Clear; W. wind	...	...
" 9	...	...	23.9	Clear; mild N.E. wind	35.4	Clear; mild N.E. wind	40.4	Clear; mild N.E. wind	...	...
" 10	...	...	26.4	Clear; E. wind	33.9	Clear; high E. wind	36.9	Clear; high E. wind	...	...
" 11	...	...	...	...	...	...	...	...	...	...
SUKHAI N. C., DISTRICT KORLUK.										
December 21	34.9	Clear; E. wind	...	...	34.4	Clear; E. wind	37.4	Clear; E. wind	...	...
" 22	24.9	Clear; mild N. wind	...	...	31.9	Clear; mild N.W. wind	34.9	Clear; mild W. wind	...	...
" 23	...	...	22.4	Cloudy; mild E. wind	34.9	Clear; S.E. wind	35.4	Clear; S.E. wind	...	...

TABLE III.—*Observations of Temperature of the Air.*—(Continued).

SUKHAI N. C., DISTRICT KORLUK.

Date	6 A.M.		9 A.M.		Noon		3 P.M.		6 P.M.	
	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS
1879										
December	Degrees		Degrees		Degrees		Degrees		Degrees	
24	...	...	22.9	Clear; N.W. wind	39.9	Cloudy; N. wind	37.9	Cloudy; N. wind	...	...
"	...	...	29.9	Cloudy; mild S.E. wind	43.4	Cloudy; mild S.E. wind	45.9	Cloudy; mild S.E. wind	...	...
26	...	...	31.4	Cloudy; high N.E. wind	28.9	Cloudy; high N.E. wind	32.4	Cloudy; E. wind	...	...
27	...	...	24.9	Cloudy; snowing; mild S. wind	30.4	Cloudy; snowing; S.E. wind	31.9	Cloudy; snowing; S.E. wind	...	...
28	...	...	13.9	Clear; E. wind	20.4	Clear; E. wind	21.4	Clear; E. wind	...	...
29	...	...	20*	Cloudy; S.W. wind	26.9	Cloudy; S.E. wind	27.4	Cloudy; S.E. wind	...	...
30	...	...	†	Cloudy; snowy; S.W. wind	23.4	Cloudy; snowing; S. wind	23.9	Cloudy; S. wind	...	...
31	...	...	†	A few clouds; W. wind; fall of snow on surrounding hills last night	19.4	A few clouds; S.E. wind	21.4	A few clouds; S. wind	...	...
1880										
January	...	...	...	A few clouds; S.W. wind	...	A few clouds; N.E. wind	20*	A few clouds; S.E. wind	...	...
"	...	...	†	A few clouds; W. wind	23.4	A few clouds; S.W. wind	25.9	A few clouds; S.E. wind	...	...
"	...	...	20*	A few clouds; S.E. wind	30.4	Cloudy; S.E. wind	34.9	Cloudy; S. wind	...	...
"	...	...	†	Clear; E. wind	26.9	A few clouds; S.E. wind	29.9	A few clouds; S.E. wind	...	...
"	...	...	†	A few clouds; N.E. wind	27.9	A few clouds; S.E. wind	31.4	A few clouds; S. wind	...	...
"	...	...	...	A few clouds; E. wind	24.4	A few clouds; E. wind	28.9	A few clouds; E. wind	...	...
"	...	...	†	A few clouds; mild W. wind	29.4	Cloudy; S.E. wind	32.9	Cloudy; S.E. wind	...	...
"	...	...	†	A few clouds; mild E. wind	26.9	A few clouds; N.E. wind	33.4	A few clouds; strong W. wind	...	...

\* These are approximate.

† In these cases the mercury receded into the bulb where it of course could not be read; but by estimate it is concluded that the prevailing cold was more than 18° below 0° of Fahrenheit's scale.

TABLE III.—*Observations of Temperature of the Air—(Continued).*

SUKHAI N. C., DISTRICT KORLUK.

Date	6 A.M.		9 A.M.		Noon		3 P.M.		6 P.M.	
	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS
1880 January 9	Degrees ...	...	Degrees *	Cloudy; S.E. wind	Degrees 27·4	A few clouds; E. wind	Degrees 31·4	A few clouds; W. wind	Degrees ...	...
" 10	...	...	*	Cloudy; W. wind	22·4	Cloudy; S. wind	28·4	Cloudy; S. wind	...	...
" 11	...	...	20†	Cloudy; W. wind	33·4	Cloudy; S.W. wind	34·9	A few clouds; S. wind	...	...
" 12	...	...	*	A few clouds; E. wind	27·4	A few clouds; S.E. wind	31·9	A few clouds; S.E. wind	...	...
" 13	...	...	*	A few clouds; E. wind	26·9	A few clouds; E. wind	29·4	A few clouds; E. wind	...	...
" 14	...	...	*	Cloudy; E. wind	29·9	Cloudy; W. wind	29·9	Cloudy; E. wind	...	...
" 15	...	...	*	A few clouds; N. wind	24·9	A few clouds; N. wind	28·9	Cloudy; N. wind	...	...
" 16	...	...	*	Clear; S. wind	27·9	A few clouds; S. wind	31·9	A few clouds; S. wind	...	...
" 17	...	...	*	Cloudy; N.E. wind	27·9	Cloudy; S.E. wind	29·9	Cloudy; strong E. wind	...	...
" 18	...	...	*	A few clouds; N.E. wind	24·9	A few clouds; E. wind	28·9	Cloudy; E. wind	...	...
" 19	...	...	20†	Cloudy; E. wind	25·9	Cloudy; N.E. wind	27·9	Very cloudy; E. wind	...	...
" 20	...	...	20†	Very cloudy; snowing; E. wind	27·9	Very cloudy; snowing; E. wind	20†	Very cloudy; snowing; strong E. wind	...	...
" 21	...	...	*	Very cloudy; snowing; mild S. wind	20†	Very cloudy; snowing; N. wind	20†	Very cloudy; snowing; N. wind	...	...
" 22	...	...	*	Clear; N.E. wind	*	Clear; S.E. wind	*	Clear; S. wind	...	...
" 23	...	...	*	Clear; E. wind	*	A few clouds; mild S. wind	20†	A few clouds; mild S. wind	...	...
" 24	...	...	*	Cloudy; N.E. wind	*	Cloudy; E. wind	20†	Cloudy; E. wind	...	...
" 25	...	...	13·9	A few clouds; E. wind	21·4	A few clouds; E. wind	23·4	A few clouds; mild S.W. wind	...	...

\* In these cases the mercury receded into the bulb where it of course could not be read; but by estimate it is concluded that the prevailing cold was more than 18° below 0° of Fahrenheit's scale.  
† These are approximate.

TABLE III.—*Observations of Temperature of the Air—(Continued).*

SUKHAI N. C., DISTRICT KORLUK.

Date	6 P. M.		9 A. M.		Noon		3 P. M.		6 P. M.	
	Temperature F.h.	Remarks	Temperature F.h.	Remarks	Temperature F.h.	Remarks	Temperature F.h.	Remarks	Temperature F.h.	Remarks
1890 January 26	Degrees ...	...	Degrees 4.9	A few clouds; S.W. wind	Degrees 9.9	A few clouds; E. wind	Degrees 21.9	Clear; S. wind	Degrees ...	...
" 27	...	...	9.9	Clear; S. wind	21.9	A few clouds; mild S.W. wind	28.4	A few clouds; mild S. wind	...	...
" 28	...	...	14.4	A few clouds; S. wind	29.9	A few clouds; mild S. wind	35.9	Cloudy; mild S. wind	...	...
" 29	...	...	17.4	Very cloudy; E. wind	31.4	Cloudy; mild S.E. wind	30.4	Cloudy; S.E. wind	...	...
" 30	...	...	20.4	A few clouds; S.W. wind	31.9	A few clouds; S. wind	37.9	A few clouds; S. wind	...	...
" 31	...	...	21.9	Cloudy; S.W. wind	33.4	A few clouds; S. wind	38.9	A few clouds; S. wind	...	...
February 1	...	...	30.4	A few clouds; calm	43.4	A few clouds; strong W. wind	43.4	A few clouds; strong W. wind	...	...
" 2	...	...	21.4	Cloudy; E. wind	39.9	Cloudy; S. wind	42.4	A few clouds; E. wind	...	...
" 3	...	...	24.9	Very cloudy; mild N.E. wind	36.2	Very cloudy; mild E. wind	39.4	Very cloudy; S.W. wind	...	...
" 4	...	...	23.4	A few clouds; S.W. wind	40.4	A few clouds; S. wind	43.2	A few clouds; E. wind	...	...
" 5	...	...	25.4	Cloudy; S.E. wind	37.9	Cloudy; S. wind	43.9	A few clouds; S.E. wind	...	...
" 6	...	...	23.9	Very cloudy; E. wind	31.2	Cloudy; strong E. wind	33.2	A few clouds; strong E. wind	...	...
" 7	...	...	22.9	Cloudy; snowing; E. wind	29.7	A few clouds; S. wind	35.2	A few clouds; S.E. wind	...	...
" 8	...	...	17.9	Clear; S.E. wind	29.7	Clear; S.E. wind	41.4	A few clouds; mild S. wind	...	...
" 9	...	...	24.4	Very cloudy; E. wind	35.9	Very cloudy; mild S.W. wind	40.9	Very cloudy; calm	...	...
" 10	...	...	28.2	Cloudy; mild E. wind	40.4	Cloudy; S. wind	43.9	Cloudy; S. wind	...	...

TABLE III.—*Observations of Temperature of the Air—(Continued).*

HOIDUTHARA VILLAGE, DISTRICT KORLUK.

Date	6 A.M.		9 A.M.		Noon		3 P.M.		6 P.M.	
	Temperature F. & C.	Remarks	Temperature F. & C.	Remarks	Temperature F. & C.	Remarks	Temperature F. & C.	Remarks	Temperature F. & C.	Remarks
1880										
March	Degrees		Degrees		Degrees		Degrees		Degrees	
2	...	...	23.9	Clear; E. wind	32.4	Clear; S.E. wind	36.9	A few clouds; E. wind	...	...
"	...	...	32.4	Very cloudy; mild S. wind	39.4	Very cloudy; mild S.E. wind	39.9	Very cloudy; S.E. wind	...	...
"	...	...	31.4	A few clouds; E. wind	45.7	Cloudy; duststorm from W.	39.9	Cloudy; storm continuing	...	...
"	...	...	24.9	Cloudy; E. wind	42.9	Cloudy; duststorm from W.	39.4	Cloudy; storm continuing	...	...
"	...	...	33.4	Clear; mild E. wind	34.9	A few clouds; strong E. wind	40.2	A few clouds; mild E. wind	...	...
"	...	...	27.9	Cloudy; E. wind	36.4	Very cloudy; strong N.E. wind	39.4	Very cloudy; strong N. wind	...	...
"	...	...	34.7	A few clouds; E. wind	41.9	A few clouds; E. wind	46.9	A few clouds; E. wind	...	...
"	...	...	43.2	A few clouds; mild E. wind	49.9	A few clouds; mild E. wind	57.4	A few clouds; mild E. wind	...	...
"	...	...	43.4	Cloudy; N.E. wind	55.9	Cloudy; N.E. wind	61.9	Cloudy; mild E. wind	...	...
"	...	...	40.7	A few clouds; E. wind	50.2	A few clouds; E. wind	59.4	A few clouds; E. wind	...	...
YEMBI, DISTRICT KORLUK.										
April										
3	...	...	48.9	Cloudy; mild S.E. wind	53.9	Cloudy; duststorm from N.	46.4	Very cloudy; storm continuing	...	...
"	32.9	Cloudy; N.E. wind	45.4	Very cloudy; E. wind	52.9	Cloudy; S. wind	55.4	Cloudy; S. wind	43.9	Cloudy; S. wind
"	22.9	Very cloudy; S. wind	41.9	Very cloudy; S. wind	52.9	Cloudy; S. wind	58.9	Cloudy; duststorm from N.	46.9	Cloudy; storm continuing
"	24.9	Cloudy; E. wind	45.9	Cloudy; E. wind	56.4	Cloudy; E. wind	63.4	Cloudy; E. wind	49.4	Cloudy; strong N. wind
"	34.9	Very cloudy; strong N. wind	44.9	Very cloudy; strong N. wind	48.9	Very cloudy; N. wind	42.9	Very cloudy; strong N. wind	32.7	Very cloudy; duststorm from N.

TABLE III.—*Observations of Temperature of the Air—(Continued).*

## YEMBI, DISTRICT KORLUK.

Date	6 A.M.		9 A.M.		Noon		3 P.M.		6 P.M.	
	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS
1880 April 8	Degrees 24·4	Cloudy; strong S. wind; fall of snow on surrounding hills last night	Degrees 36·9	Cloudy; strong S. wind	Degrees 45·4	Cloudy; strong W. wind	Degrees 38·9	Very cloudy; hailstorm; strong W. wind	Degrees 32·9	Very cloudy; strong N. wind
" 9	16·9	Cloudy; N.E. wind	29·4	Cloudy; strong S.W. wind	34·4	Cloudy; strong W. wind	39·9	Cloudy; strong W. wind	32·9	Cloudy; strong W. wind
" 10	19·9	A few clouds; mild E. wind	33·4	Cloudy; S. wind	39·4	A few clouds; strong W. wind	44·2	Cloudy; strong W. wind	39·9	Cloudy; strong W. wind
May 23	34·9	Clear; W. wind	52·9	Clear; mild W. wind	67·9	A few clouds; mild W. wind	66·9	Cloudy; strong W. wind	58·9	Cloudy; strong W. wind
" 24	31·9	A few clouds; S.E. wind	51·9	A few clouds; S.W. wind	70·7	Cloudy; S.W. wind	69·9	Cloudy; N. wind	64·4	Cloudy; N. wind
" 25	33·9	A few clouds; N.E. wind	56·2	Cloudy; S.E. wind	72·9	Cloudy; N.E. wind	74·9	Cloudy; strong N.E. wind	57·9	Cloudy; strong N.E. wind
" 26	49·9	Very cloudy; duststorm from N.E.	57·9	Very cloudy; storm continu- ing	56·9	Very cloudy; storm continu- ing	56·9	Very cloudy; storm continu- ing	47·9	Very cloudy; storm continu- ing
" 27	42·9	Very cloudy; S.E. wind; rain last night	50·9	Very cloudy; S.E. wind	61·9	Very cloudy; S.E. wind	56·9	Very cloudy; thunderstorm at distance	46·9	Very cloudy; S. wind; slight rain
" 28	37·2	A few clouds; N.E. wind; fall of snow last night on surrounding hills	52·9	A few clouds; N.E. wind	63·4	A few clouds; S.W. wind	66·9	A few clouds; strong N.E. wind	58·2	Cloudy; strong N.E. wind
" 29	38·9	A few clouds; mild E. wind	60·9	A few clouds; mild E. wind	70·9	A few clouds; strong N.E. wind	71·9	Cloudy; strong N.E. wind	62·9	Cloudy; strong N.E. wind
" 30	47·9	Very cloudy; strong N.E. wind	56·9	Very cloudy; strong N.E. wind.	59·4	Very cloudy; duststorm from N.E.	54·2	Very cloudy; storm continu- ing	49·9	Very cloudy; storm continu- ing
" 31	42·9	Very cloudy; mild E. wind; rain last night	60·9	Cloudy; calm	64·4	Very cloudy; strong N.E. wind; hailstorm	60·2	Cloudy; storm from N.E.	54·9	Cloudy; storm continuing

TABLE III.—*Observations of Temperature of the Air—(Continued).*

YEMBI, DISTRICT KORLUK.

Date	6 A.M.		9 A.M.		Noon		3 P.M.		6 P.M.	
	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS	Temperature Fah.	REMARKS
1880 June 1	Degrees 45·9	Clear; mild E. wind	Degrees 57·9	Clear; mild E. wind	Degrees 64·9	A few clouds; mild N. wind	Degrees 73·7	Cloudy; storm N.E. wind	Degrees 64·9	Cloudy; strong N.E. wind
" 2	50·9	Cloudy; N. wind	63·9	Cloudy; N. wind	71·9	Cloudy; strong N.E. wind	68·9	A few clouds; duststorm from N.E.	59·9	A few clouds; storm continuing
" 3	50·2	Cloudy; E. wind	62·9	Cloudy; strong N.E. wind	68·4	Cloudy; strong N.E. wind	62·7	Very cloudy; duststorm from N.E.	59·9	Very cloudy; storm continuing
" 4	42·9	A few clouds; mild N.W. wind	65·2	A few clouds; mild S.W. wind	70·4	A few clouds; duststorm from N.E.	69·7	A few clouds; storm continuing	59·2	Cloudy; storm continuing



TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.*

PLACE	District or Patti and distance in it traversed in miles	Forts	Gom-pas	Tents	Houses	POPULATION	
						Lay	Lamas & Dalas
Lhasa ... ..	Lhasa, 10	1	10	...	...	17000	2000
Dabchilinga ... ..		...	...	...	2	10	...
Dabchi ... ..		1	...	...	...	300	...
Chiángro ... ..		...	...	...	12	70	...
Ser-ra Gom-pa ... ..		...	1	...	1000	100	5500
Parisiga village ... ..		...	...	...	5	30	...
Hungusiga „ ... ..		...	...	...	4	25	...
Kechang „ ... ..		...	...	...	5	30	...
Khutho Gom-pa ... ..		...	1	...	10	3	20
Gakunaka Chenkhang ... ..		...	1	...	5	30	15
Lingbu Dzong ... ..		1	...	...	10	60	5
Totals ... ..	...	3	13	...	1053	17657	7540
Baya village ... ..	Phembu, 25	...	...	...	5	30	...
Nalenda Gom-pa ... ..		...	1	...	...	10	100
Langta „ ... ..		...	1	...	...	5	50
Debungsiga village ... ..		...	...	...	20	120	...
Village ... ..		...	...	...	5	30	...
Lundub Dzong ... ..		1	...	...	50	300	...
Gom-pa ... ..		...	1	...	50	10	100
Village ... ..		...	...	...	5	30	...
Totals ... ..	...	1	3	...	135	535	250
Talung Gom-pa ... ..	Talung, 10	...	1	...	300	300	300
Phondu Dzong ... ..	Phondu, 7	1	...	...	50	300	...
Village ... ..		...	...	...	2	10	...
Chiomo Lhakang ... ..		...	1	...	50	150	5
Totals ... ..	...	1	1	...	102	460	5
Lani Ta-sam ... ..	Reting, 12	...	...	50	...	200	...
Dam ... ..	Dam, 16	...	1	200	3	800	...
Nomad Camps ... ..	Shangshung, 50	...	...	500	...	2000	...
Māne Khorchen ... ..	Nāg Chu Kha, 45	...	1	...	2	2	2
Shiabden Gom-pa ... ..		...	1	50	100	400	100
Nomad Camps ... ..		...	...	3000	...	5500	...
Totals ... ..	...	...	2	3050	102	5902	102

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.—(Continued).*

PLACE	District or Patti and distance in it traversed in miles	Forts	Gom-pa	Tents	Houses	POPULATION	
						Lay	Lamas & Dabas
Nomad Camps ... ..	Jama, 11	...	...	1500	...	3000	...
Nomad Camps ... ..	Ata, 13	...	...	500	...	1000	...
Nomad Camps ... ..	Yagra, 44	...	...	1000	...	2000	...
Uninhabited tract ... ..	240	...	...	...	...	...	...
Amthun N.C. } Naichi " } Thäglaga " } Shiärthoge " }	Taichinar, 170	...	...	10	...	60	...
Golmo " ... ..		...	...	50	...	125	25
Hurthothäle ... ..		...	...	20	...	50	10
Thugthe N.C. ... ..		...	...	50	...	125	25
Thägthe " ... ..		...	...	50	...	125	25
Däla " ... ..		...	...	4	...	10	2
Chügu " ... ..		...	...	2	...	5	1
Dhänähotho N.C. ... ..		...	...	2	...	5	1
Tengelik ... ..		...	...	100	10	250	50
Harori N.C. ... ..		...	...	2	...	5	1
Dabasutha " ... ..		...	...	4	...	10	2
Totals ... ..	...	...	...	294	10	770	142
Sukhai N.C. } Hoiduthara vil. }	Korluk, 305	...	...	100	2	250	50
Horga village ... ..		...	...	...	5	2	...
Baga Tsaidam ... ..		...	...	50	...	125	25
Ikhe " ... ..		...	...	100	...	250	50
Urel ... ..		...	...	3	...	5	1
Yembi ... ..		...	...	300	...	750	150
Totals ... ..	...	...	...	553	7	1382	276
Saitu ... ..	Saitu, 72	1	...	...	200	12000	...
Jun ... ..	Jun, 30	...	...	50	1	130	30
Gakcharnamaga N.C. ... ..	Baron, 30	...	...	30	...	75	15
Baron Tsaidam ... ..		...	...	50	10	170	30
Hadho village ... ..		...	...	1	...	3	...
Totals ... ..	...	...	...	81	10	248	45

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.*—(Continued).

PLACE	District or Patti and distance in it traversed in miles	Forts	Gom pas	Tents	Houses	POPULATION	
						Lay	Lamas & Dabas
Uninhabited tract ...	105	...	...	...	...	...	...
Niamcho ...	Niamcho, 56	...	...	100	50	600	...
Dhingo village ...	Derge, 260	...	...	...	10	40	...
Village ...		...	...	...	15	60	...
Fundhu village ...		...	...	...	10	40	...
Kanzo Gom-pa ...		...	1	...	50	100	50
2 Villages ...		...	...	...	20	80	...
Thiso village ...		...	...	...	30	120	...
Khutho village ...		...	...	...	20	80	...
Läso village ...		...	...	...	15	60	...
Thuden Gom-pa ...		...	1	...	30	10	30
Laindha village ...		...	...	...	50	200	...
Thändha „ ...		...	...	...	40	160	...
Dwinda „ ...		...	...	...	50	200	...
Rängta „ ...		...	...	...	15	60	...
Dhokor „ ...		...	...	...	30	120	...
Jindha „ ...		...	...	...	30	120	...
Bari „ ...		...	...	...	10	40	...
Denda „ ...		...	...	...	30	120	...
Bhönchi Gom-pa ...		...	1	...	50	10	100
Thombudha village ...		...	...	...	20	80	...
Räkna Gom-pa ...		...	1	...	20	5	40
Kegu „ ...		...	1	...	300	30	300
Kegudo ...		...	...	...	200	600	...
Tangu Gom-pa ...		...	1	...	30	5	60
Tenchin „ ...		...	1	40	30	90	50
Gom-pa ...		...	1	5	5	20	10
Khansar village ...		...	...	...	25	100	...
Village ...		...	...	...	5	15	...
Shiongo Gom-pa ...		...	1	...	30	10	50
2 Villages ...		...	...	...	30	120	...
Siti village ...		...	...	...	10	40	...
Gom-pa ...		...	1	...	15	5	30
Donthok Gom-pa ...		...	1	...	50	10	100
Dogung village ...		...	...	...	10	40	...
Shāo village ...		...	...	...	5	20	...
Carried over ...		...	11	45	1290	2810	820

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.*—(Continued).

PLACE	District or Patti and distance in it traversed in miles	Forts	Gom-pas	Tents	Houses	POPULATION	
						Lay	Lamas & Debas
Brought forward ...	...	...	11	45	1290	2810	820
Dondi village ...	...	...	...	...	5	20	...
Dwinthang Gom-pa ...	...	...	1	...	100	20	200
2 Villages ...	...	...	...	...	20	80	...
Sila village ...	...	...	...	...	30	120	...
Dhingo Gom-pa ...	...	...	1	...	30	10	60
Rarang village ...	...	...	...	...	20	80	...
Ohiti Gom-pa ...	...	...	1	...	35	10	70
Chingo „ ...	...	...	1	...	50	10	100
Dolma Lhakang ...	...	...	1	...	30	120	5
Losino village ...	Derge, 260	...	...	...	30	120	...
Kāphu Gom-pa ...		...	1	...	25	5	50
Bāga village ...		...	...	...	10	40	...
Rāra „ ...		...	...	...	5	20	...
Ngali Gom-pa ...		...	1	...	30	10	60
Chiri village ...		...	...	...	15	60	...
Gainjo Gom-pa ...		...	1	...	60	10	120
Jongu „ ...		...	1	...	50	10	100
Village ...		...	...	...	7	28	...
Jokchen Gom-pa ...		...	1	100	200	400	300
Yulung village ...	Rongbacha, 45	...	...	50	16	260	...
Village ...		...	...	...	10	40	...
Totals ...		...	21	196	2068	4333	1885
Lāgarkhādo village ...		...	...	...	2	20	...
Durkug „ ...		...	...	...	50	200	...
Daje Gom-pa ...		...	1	...	300	50	1000
Ringo village ...		...	...	...	43	160	...
2 Villages ...		...	...	...	12	48	...
Bhiar Gom-pa ...		...	1	...	50	10	100
Nena „ ...		...	1	...	35	10	70
Village ...	Dau, 35	...	...	...	5	20	...
Kānsogo Gom-pa ...		...	1	...	2500	2500	2000
4 Villages ...		...	...	...	40	160	...
Totals ...		...	4	...	3034	3178	3170
Khānsar village ...		...	...	...	10	40	...
Jior Gom-pa ...		...	1	...	30	5	60
Carried over ...		...	1	...	40	45	60

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.*—(Continued).

PLACE	District or <i>Patti</i> and distance in it traversed in miles	Forts	<i>Gom-pas</i>	Tents	Houses	POPULATION	
						Lay	Lamas & <i>Dabas</i>
Brought forward ...	...	...	1	...	40	45	60
3 Villages ...	...	...	...	...	40	160	...
Dau ...	...	...	...	...	30	150	...
3 Villages ...	Dau, 35	...	...	...	15	60	...
Dwinda village ...	...	...	...	...	25	100	...
3 Villages ...	...	...	...	...	20	80	...
Gori village ...	...	...	...	...	15	60	...
Totals ...	...	...	1	...	185	655	60
Village ...	...	...	...	...	10	40	...
Dango Gom-pa ...	Dango, 25	...	1	...	1000	50	2000
Bathog village ...	...	...	...	...	15	60	...
Totals ...	...	...	1	...	1025	150	2000
10 Villages ...	...	...	...	...	90	360	...
Yathok village ...	...	...	...	...	25	100	...
Dathok „ ...	...	...	...	...	10	40	...
3 Villages ...	Tau, 40	...	...	...	30	120	...
Nichong Gom-pa ...	...	...	1	...	600	130	800
5 Villages ...	...	...	...	...	65	260	...
Giara village ...	...	...	...	...	10	40	...
Totals ...	...	...	1	...	830	1050	800
2 Villages ...	...	...	...	...	20	80	...
Khanear village ...	...	...	...	...	15	60	...
<i>Gom-pa</i> ...	...	...	1	...	10	5	10
7 Villages ...	...	...	...	...	40	160	...
Shao village ...	...	...	...	...	15	60	...
3 Villages ...	...	...	...	20	20	140	...
Tombadu village ...	...	...	...	...	10	40	...
Chithog Giachug ...	Minia, 100	...	...	...	25	100	...
Ta-chien-lu ...	...	...	4	...	1200	11600	400
Chachukha Giachug ...	...	...	...	...	3	12	...
Village ...	...	...	...	...	10	40	...
Ticho village ...	...	...	...	...	15	60	...
6 Villages ...	...	...	...	...	30	120	...
Anyia Giachug ...	...	...	...	...	30	120	...
Carried over ...	...	...	5	20	1443	12597	410

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.*—(Continued).

PLACE	District or <i>Patti</i> and distance in it traversed in miles	Forts	<i>Gom-pas</i>	Tents	Houses	POPULATION	
						Lay	Lāmas & <i>Dabas</i>
Brought forward ...	...	...	5	20	1443	12597	410
4 Villages ...	Minia, 100	...	...	...	25	100	...
Thondo Churtan ...		...	1	...	8	32	...
7 Villages ...		...	...	...	45	180	...
Golokthok Giachug ...		...	...	...	20	80	...
Golokthok village ...		...	...	...	20	80	...
2 Villages ...		...	...	...	5	20	...
Kashi Gom-pa ...		...	1	...	30	10	60
Totals ...	...	...	7	20	1596	13099	470
Urung Dongu Giachug ...	Nagchukha, 30	...	...	...	15	60	...
Village ...		...	...	...	2	8	...
Zi-ra village ...		...	...	...	3	12	...
Village ...		...	...	...	3	12	...
Urongsahi village ...		...	...	...	10	40	...
2 Villages ...		...	...	...	6	24	...
Kharingbo Giachug ...		...	...	...	15	60	...
Village ...		...	...	...	5	20	...
Nagchukha ...		...	...	...	150	600	...
Village ...		...	...	...	10	40	...
Margen Dongu Giachug ...		...	...	...	5	20	...
Totals ...	...	...	...	...	224	896	...
2 <i>Giachugs</i> ...	Li-tang, 85	...	...	...	8	30	...
Golok Gom-pa ...		...	1	...	25	10	50
Golokthok Giachug ...		...	...	...	15	60	...
3 Villages ...		...	...	...	12	50	...
Tāmārāthong Giachug ...		...	...	10	7	60	...
<i>Giachug</i> ...		...	...	10	2	40	...
Hapchukha Giachug ...		...	...	...	10	40	...
Nomad Camps ...		...	...	100	...	300	...
<i>Giachug</i> ...		...	...	...	1	4	...
Li-tang (small city) ...		...	1	50	2500	2500	2500
<i>Rito</i> ...		...	1	...	5	5	15
<i>Giachug</i> ...		...	...	...	1	4	...
Jiambothok Giachug ...		...	...	...	4	16	...
<i>Giachug</i> ...		...	...	...	1	4	...
Gāralārcha Giachug ...		...	...	...	3	12	...
Carried over ...	...	...	3	170	2594	3135	2565

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.—(Continued).*

PLACE	District or Patti and distance in it traversed in miles	Forts	Gom-pas	Tents	Houses	POPULATION	
						Lay	Lamas & Dobs
Brought forward ...	...	...	3	170	2694	3135	2565
2 Villages ...	Li-tang, 85	...	...	...	10	40	...
Rano village ...		...	...	...	10	40	...
Māne Ringbo ...		...	...	15	...	45	...
Village ...		...	...	...	10	40	...
Nyenda Giachug ...		...	...	...	10	40	...
Rathi ...		...	...	...	5	20	...
Totals ...	...	...	3	185	2639	3360	2565
Tashu Giachug ...	Ba-tang, 55	...	...	...	15	60	...
Nomad Camps ...		...	...	50	...	150	...
Pang-tha-mo Giachug ...		...	...	...	5	20	...
Village ...		...	...	...	2	8	...
Ba-tang (Chioti Gom-pa) ...		...	1	...	2000	3000	1000
Village ...		...	...	...	10	40	...
Gom-pa ...		...	1	...	15	5	30
5 Villages ...		...	...	...	35	140	...
Village ...		...	...	...	10	40	...
Dubāna village ...		...	...	...	30	120	...
2 Villages ...		...	...	...	20	80	...
Totals ...	...	...	2	50	2142	3663	1030
Konzukha Giachug ...	Makham, 55	...	...	...	15	60	...
5 Villages ...		...	...	...	25	100	...
Giachug ...		...	...	...	6	24	...
Lhakang ...		...	1	...	5	15	5
Village ...		...	...	...	10	40	...
Lhamdun village ...		...	1	...	20	80	10
3 Villages ...		...	...	...	30	120	...
Giachug ...		...	...	...	10	40	...
Phula village ...		...	...	...	20	80	...
2 Villages ...		...	...	...	10	40	...
Gartok or Makham ...		...	1	...	700	1000	400
2 Villages ...		...	...	...	10	40	...
Lāo village ...		...	...	...	20	80	...
Gom-pa ...		...	1	...	10	4	20
3 Villages ...		...	...	...	10	40	...
Samba Dukha (Ferry) ...		...	...	...	5	20	...
Carried over ...	...	...	4	...	906	1783	435

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.—(Continued).*

P L A C E				District or Patti and distance in it traversed in miles	Forte	Gom-pas	Tents	Houses	POPULATION	
									Lay	Lamas & Dabas
Brought forward ...				...	...	4	...	906	1783	435
2 Villages ...				Mākham, 55	...	...	...	15	60	...
Jio village ...					...	...	...	15	60	...
Jio Gom-pa ...					...	1	...	15	5	30
2 Villages ...					...	...	...	4	8	...
Cha Churtan ...					...	1	...	30	120	2
Gom-pa ...					...	1	...	10	4	30
Totals ...				...	...	7	...	995	2040	497
Dayul village ...				Dayul, 30	...	...	...	15	60	...
Dayul Gom-pa ...					...	1	...	100	100	100
Totals ...				...	...	1	...	115	160	100
Koli village ...				Nu Chu Giu, 60	...	...	...	2	8	...
Village ...					...	...	...	6	24	...
Jior village ...					...	...	...	25	100	...
Jior Gom-pa ...					...	1	...	10	2	20
Gom-pa ...					...	1	...	5	2	10
Village ...					...	...	...	15	60	...
Yu village ...					...	...	...	12	48	...
Gom-pa ...					...	1	...	15	5	30
Hākha village ...					...	...	...	15	60	...
Ji village ...					...	...	...	15	60	...
2 Villages ...					...	...	...	3	12	...
No-yu village ...					...	...	...	20	80	...
Niakho „ ...					...	...	...	15	60	...
Totals ...				...	...	3	...	158	521	60
Bika village ...				Zayul, 162	...	...	...	6	24	...
3 Villages ...					...	...	...	10	40	...
Drowa Gom-pa ...					...	1	...	25	5	50
3 Villages ...					...	...	...	20	80	...
Gāwa village ...					...	...	...	15	60	...
Chikung village ...					...	...	...	4	16	...
Dabla village ...					...	...	...	10	40	...
Village ...					...	...	...	2	8	...
Lhakang ...					...	1	...	5	20	1
Carried over ...				...	...	2	...	97	293	51



TABLE IV—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.—(Continued).*

PLACE				District or <i>Patti</i> and distance in it traversed in miles	Forts	<i>Gom-pas</i>	Tents	Houses	POPULATION	
									Lay	Lamas & <i>Dabas</i>
Brought forward ...				...	..	2	...	97	293	51
2 Villages ...				...	...	...	...	4	8	...
Shika ...				...	...	...	...	25	100	...
Rima village ...				...	...	...	...	40	160	...
Village ...				...	...	...	...	10	40	...
Duning village ...				...	...	...	...	15	60	...
Singu „ ...				...	...	...	...	7	28	...
Sama „ ...				...	...	...	...	7	28	...
Dungtang village ...				...	...	...	...	3	12	...
Salur „ ...				...	...	...	...	1	4	...
Bonathang „ ...				...	...	...	...	3	12	...
Thaling „ ...				...	...	...	...	10	40	...
Timi „ ...				...	...	...	...	1	4	...
Di „ ...				...	...	...	...	7	28	...
Chiungsi Gom-pa ...				Zayul, 162	...	1	...	7	2	14
Thoyu village ...				...	...	...	...	3	15	...
Tithong „ ...				...	...	...	...	3	15	...
Jungu Gom-pa ...				...	...	1	...	8	2	16
Murgu „ ...				...	...	1	...	10	4	20
2 Villages ...				...	...	...	...	3	15	...
Sonling village ...				...	...	...	...	15	75	...
Isamedh „ ...				...	...	...	...	1	5	...
Rangyul „ ...				...	...	...	...	5	25	...
Isatodh „ ...				...	...	...	...	1	5	...
Modung „ ...				...	...	...	...	5	25	...
Sugu „ ...				...	...	...	...	8	40	...
Lasi „ ...				...	...	...	...	3	15	...
Ata „ ...				...	...	...	...	7	35	...
Totals ...				...	...	5	...	309	1095	101
Camp ...				Nagong, 40	...	...	4	10	12	...
Lhagu village ...					...	...	...	20	80	...
Village ...					...	...	...	10	40	...
Khāñsar village ...					...	...	...	1	4	...
Village ...					...	...	...	5	20	...
Carried over ...				...	...	...	4	46	156	...

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.—(Continued).*

PLACE	District or Patti and distance in it traversed in miles	Forts	Gom-pas	Tents	Houses	POPULATION	
						Lay	Lamas & Dabas
Brought forward ...	...	...	...	4	46	156	..
Nagongjhiio ...	Nagong, 40	...	1	...	10	40	2
Shiuden Gom-pa ...		...	1	...	150	150	100
Village ...		...	...	...	10	40	...
Rāyna village ...		...	...	...	10	40	...
Rahu village ...		...	...	...	8	32	...
Nankhazod ...		...	1	...	24	2	1
Totals ...	...	...	3	4	258	460	103
Gonkha village ...	Dainsi, 30	...	...	...	5	20	...
Village ...		...	...	...	5	20	...
Dongsar village ...		...	...	...	40	160	...
Au-takpa Gom-pa ...		...	1	...	40	10	80
4 Villages ...		...	...	...	20	80	...
Dango Gom-pa ...		...	1	...	30	10	60
Diu village ...		...	...	...	8	32	...
Village ...		...	...	...	10	40	...
Bungyu village ...		...	...	...	8	32	...
Village ...		...	...	...	5	20	...
Totals ...	...	...	2	...	171	424	140
Camp ...	Pashu, 50	...	...	5	...	15	...
Tapsing village ...		...	...	...	5	20	...
6 Villages ...		...	...	...	35	140	...
Baimbu Gom-pa ...		...	1	...	15	5	30
4 Villages ...		...	...	...	20	80	...
Rango ...		...	...	...	10	40	...
2 Villages ...		...	...	...	10	40	...
Niopha Gom-pa ...		...	1	...	10	5	20
Totals ...	...	...	2	5	105	345	50
Jiaphang Gom-pa ...	Lho Dzong	...	1	...	60	10	120
Ong ...		...	1	...	20	5	40
4 Villages ...		...	...	...	20	80	...
Chukpodesa village ...		...	...	...	1	4	...
Lho Dzong ...		1	1	...	150	200	200
7 Villages ...		...	...	...	30	120	...
Totals ...	...	1	3	...	281	419	360

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.—(Continued).*

PLACE	District or Patti and distance in it traversed in miles	Forts	Gom-pas	Tents	Houses	POPULATION	
						Lay	Lamas & Dabas
Jithong Gom-pa ... ..	Jithong, 30	...	1	...	200	40	400
3 Villages ... ..		...	...	...	15	60	...
2 Gom-pas ... ..		...	2	...	30	5	60
Shobando village ... ..		...	1	...	250	800	100
3 Villages ... ..		...	...	...	15	60	...
Totals ... ..	...	...	4	...	510	965	560
Gom-pa ... ..	Pemba, 65	...	1	...	10	3	20
Camp ... ..		...	...	20	...	80	...
Bari Giachug ... ..		...	...	...	4	16	...
Camp ... ..		...	...	10	...	40	...
Lhache Gom-pa ... ..		...	1	...	10	5	20
Village ... ..		...	...	...	5	20	...
Pemba Gom-pa ... ..		...	1	...	100	50	150
5 Villages ... ..		...	...	...	25	100	...
Chiakra Gom-pa ... ..		...	1	...	30	10	60
Bargo „ ... ..		...	1	...	15	5	30
Urgentamdha Giachug Village ... ..		...	1	...	15	60	5
Totals ... ..	...	...	6	30	219	404	285
Namgialgon Giachug ... ..	Arig, 65	...	1	...	10	40	5
Gom-pa ... ..		...	1	...	25	10	50
2 Villages ... ..		...	...	...	10	40	...
Nuldokär Giachug ... ..		...	...	...	10	40	...
Arig Gom-pa ... ..		...	1	...	20	5	40
Ji village ... ..		...	...	...	4	16	...
Alädo Giachug ... ..		...	...	...	7	28	...
Alagak „ ... ..		...	...	...	2	8	...
Alachiago „ ... ..		...	...	...	5	20	...
Camp ... ..		...	...	25	...	75	...
Village ... ..		...	...	...	5	20	...
Alädochug Giachug ... ..	...	...	...	...	6	24	...
Totals ... ..	...	...	3	25	104	326	95
Camp ... ..	Lharugo, 65	...	...	15	...	45	...
Chachukha Giachug ... ..		...	...	...	5	20	...
Carried over	...	...	...	15	5	65	...

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.—(Continued).*

PLACE	District or Patti and distance in it traversed in miles	Forts	Gom-pas	Tents	Houses	POPULATION	
						Lay	Lamas & Dabas
Brought forward ...	...	...	...	15	5	65	...
Lharugo Giachug ...	Lharugo, 55	...	1	...	60	220	20
Archa „ ...		...	1	...	12	30	20
Gole „ ...		...	...	...	3	20	...
Totals ...	...	...	2	15	80	335	40
Donthog Giachug ...	Kongbo, 75	...	...	...	7	28	...
Gom-pa ...		...	1	...	20	5	40
Village ...		...	...	...	5	20	...
Laru Giachug ...		...	1	...	25	50	50
Giamda village ...		...	...	...	300	1500	...
Village ...		...	...	...	5	25	...
Saugsar Gom-pa ...		...	1	...	20	5	40
Gam Giachug ...		...	...	...	10	50	...
Nimaring Giachug ...		...	...	...	5	25	...
Totals ...	...	...	3	...	397	1708	130
Chomorawa Giachug ...	Lhokha, 147	...	...	...	10	50	...
Village ...		...	...	...	5	20	...
Jingcho Gom-pa ...		...	1	...	60	50	100
3 Villages ...		...	...	...	15	60	...
Kānadeba village ...		...	...	...	2	20	...
Hoka Dzong ...		1	...	...	250	600	...
Yachu village ...		...	...	...	1	5	...
Khātha „ ...		...	...	...	5	25	...
2 Villages ...		...	...	...	10	40	...
Shikhār Dzong ...		1	...	...	35	200	...
Zangri Khammedh ...		...	1	...	20	5	40
Zangri Dzong ...		1	...	...	30	180	...
Daisithi Gom-pa ...		...	1	...	40	10	80
Village ...		...	...	...	5	20	...
Hon-Ngari Thanjang Gom-pa ...		...	1	...	200	200	200
Tsetang ...		1	1	...	1000	4200	800
Niako Dukha ...		...	...	...	1	5	...
Chyasa Lhakang ...		...	1	...	10	5	20
Gerpa Duga ...		...	...	...	1	5	...
Dhomda village ...		...	...	...	10	50	...
Dushio „ ...		...	...	...	2	10	...
Carried over ...	...	4	6	..	1712	5760	1240

TABLE IV.—*Population &c. of Places within strips about 2 miles wide on either side of and along the routes traversed, and distances measured across each District or Patti.—(Continued).*

PLACE	District or Patti and distance in it traversed in miles	Forts	Gom-pas	Tents	Houses	POPULATION	
						Lay	Lamas & Dabas
Brought forward ...	...	4	6	...	1712	5760	1240
Chinduchoka Gom-pa ...	Lhokha, 147	...	...	...	10	65	...
Jiambaling Churtan ...		...	1	...	40	10	80
Jera Gom-pa ...		...	1	...	150	100	200
Ohitishio Dsong ..		1	...	...	1000	5000	...
Dorje-thag Gom-pa ...		...	1	...	100	20	200
Taishion village ...		...	...	...	5	30	...
Chishio ..		...	...	...	6	36	...
Ra-medh Gom-pa ...		...	1	...	100	20	200
Nianga Lhakang ...		...	1	...	5	30	1
Kong-ka Churtan ...		...	1	...	200	40	400
Kong-ka Dsong ...		1	1	...	600	2400	100
Lhasang village ...		...	...	...	5	30	...
Kina ..		...	...	...	5	30	...
Jiang-thang village ...		...	...	...	10	60	...
Kam-pa-par-tee village ...		...	...	...	20	120	...
Totals ...	...	6	13	...	3968	13751	2421

TABLE V.—*Abstract of Table IV. Population &c., in each District or Patti, within strips about 2 miles wide on either side of and along the routes traversed.*

DISTRICT	Distance traversed in miles	Forts	Gom-pas	Tents	Houses	POPULATION		
						Lay	Lamas & Dabas	Average per square mile
Lhüsa ... ..	10	3	13	...	1053	17657	7540	629·9
Phembu ... ..	25	1	3	...	185	535	250	7·9
Talung ... ..	10	...	1	...	300	300	300	15·0
Phondu ... ..	7	1	1	...	102	460	5	16·6
Reting ... ..	12	...	...	50	...	200	...	4·2
Dam ... ..	16	...	1	200	3	800	...	12·5
Shangshung ... ..	50	...	...	500	...	2000	...	10·0
Nāg Chu Kha ... ..	45	...	2	3050	102	5902	102	33·4
Jāma ... ..	11	...	...	1500	...	3000	...	68·2
Ata ... ..	13	...	...	500	...	1000	...	19·2
Yāgra ... ..	44	...	...	1000	...	2000	...	11·4
Uninhabited tract ... ..	240	...	...	...	...	...	...	...
Taichinar ... ..	170	...	...	294	10	770	142	1·3
Korluk ... ..	305	...	...	553	7	1382	276	1·4
Saitu ... ..	72	1	...	...	2000	12000	...	41·7
Jun ... ..	30	...	...	50	1	130	30	1·3
Baron ... ..	30	...	...	81	10	248	45	2·4
Uninhabited tract ... ..	105	...	...	...	...	...	...	...
Niamcho ... ..	56	...	...	100	50	600	...	2·7
Derge ... ..	260	...	21	195	2068	4283	1885	5·9
Rongbacha ... ..	45	...	4	...	3034	3178	3170	35·3
Dau ... ..	35	...	1	...	185	655	60	5·1
Dango ... ..	25	...	1	...	1025	150	2000	21·5
Tau ... ..	40	...	1	...	830	1050	800	11·6
Minia ... ..	100	...	7	20	1596	13099	470	33·9
Nag Chu Kha ... ..	30	...	...	...	224	896	...	7·5
Li-tang ... ..	85	...	3	185	2639	3360	2565	17·4
Ba-tang ... ..	55	...	2	50	2142	3663	1030	21·3
Mākham ... ..	55	...	7	...	995	2040	497	11·5
Dayul ... ..	30	...	1	...	115	160	100	2·2
Nu Chu Giu ... ..	60	...	3	...	158	521	60	2·4
Zayul ... ..	162	...	5	...	309	1095	101	1·8
Nagong ... ..	40	...	3	4	258	460	103	3·5
Dainsi ... ..	30	...	2	...	171	424	140	4·7
Pashu ... ..	50	...	2	5	105	345	50	2·0
Lho Dzong ... ..	25	1	3	...	281	419	360	7·8
Jithog ... ..	30	...	4	...	516	965	560	12·7
Pemba ... ..	65	...	6	30	219	404	285	2·7
Arig ... ..	65	...	3	25	104	326	95	1·6
Lharugo ... ..	55	...	2	15	80	335	40	1·7
Kongbo ... ..	75	...	3	...	397	1708	130	6·1
Lhokha ... ..	147	6	13	...	3968	13751	2421	27·5
Grand Totals and general average population per square mile	2815*	13	118	8407	25186	102271	25612	12·9*

\* The distance exclusive of uninhabited tracts is 2470 miles for which the average population is 12·9 per square mile within the 4-mile strip.

*Vocabulary of certain words, affixes &c., occurring in the Report.*

ABBREVIATIONS.—(A) signifies Arabic; (C), Chinese; (H), Hindi; (M), Mongolian; (P), Persian; (S), Sanskrit; (T), Tibetan; (Tur), Turki; (U), Urdu.

The spelling adopted in the vernacular words is phonetic, and is rendered by the help of vowel sounds as used in the Government Lists.

Where there is a double spelling in this List, the first one, *viz.*, that given without the parenthesis is the same as adopted in the Account; the second one, *viz.*, that within the parenthesis is the correct orthography.

Ābra (T).	...	...	A rat without a tail.
Ala (T).	...	...	Good, excellent; as in Alādo, Alagak.
Ambān (C)	...	...	A governor.
Amur Bhaino (M).	...	...	Literally "are you in health"? Amur = health and Bhaino = is or are. Mongolian way of salutation.
Arki (M).	...	...	A kind of spirit distilled from sour milk called Cheka.
Ba or Pa (T).	...	...	Pertaining to, belonging to; as in Nangba, Chiba, Gūba, Ta-sam Pa.
Baga (M).	...	...	Small; as in Baga Tsaidam.
Baimbu (Pembo) or Chiba (Chhibā) (T).	...	...	One of the two sects into which the Buddhists of Tibet are divided. (See Nangba in this list).
Bam (T).	...	...	A disease in which red blotches appear on the legs.
Bāzār (P).	...	...	A market.
Beli (M).	...	...	A chief or ruler higher in rank than a Besi.
Besi (M).	...	...	A chief or ruler in rank above Jhāsa.
Bhoj (S).	...	...	A kind of birch.
Bodh Kai (T).	...	...	One of the three dialects spoken in Tibet; the other two are Doag Kai and Khām Kai.
Bul (T).	...	...	A kind of soda used in washing, in boiling tea to extract its essence and for other purposes.
Bulāg (M).	...	...	A spring of water; as in Dugbulāg.
Cha (Chha) (T).	...	...	Salt; as in Cha Chu.
Chadamo (T).	...	...	This side; as in Dugbura Chadamo (See Nadamo in this list).
Chāza (M).	...	...	An oasis on the borders of a desert.
Chak (T).	...	...	Iron; as in Chak-sam.
Chāka (Chhāka) (T).	...	...	A salt mine; as in Chhāka Chāka.
Chāngma (T).	...	...	A species of the willow.
Chānja (Chhānja) Paulung (T).	...	...	An old Tibetan silver coin equal in value to about six annas of Indian money.
Che (Chhe) or Chen (Chheu) (T).	...	...	Chief, large; as in Chhuchen, Rāmoche.
Cheka (Chheka) (M).	...	...	Mare milk rendered acid by the addition of sour milk.
Chen (Chheu) (M).	...	...	A Mongolian weight equal to about 2 dr. avoird.
Chenkang (T).	...	...	Chen = a demon who lives in the air, and kang = a house. A temple dedicated to Chen.
Chhak (M).	...	...	A forest tree in Mongolia.
Chhung (T).	...	...	A description of beer made from a kind of barley called Ne.
Chhungba (T).	...	...	A kind of coarse woollen cloth used for making tents. (See Phingba).
Chi* (Chhi) (T).	...	...	A horse belonging to a great man; as in Chi Pon.
Chi (Chhi) Pon (T).	...	...	Master of a stable.
Chiākia (T).	...	...	A respectable Tibetan family resident in Ta-chien-lu, who have subordinate jurisdiction over the original inhabitants.
Chiākpo (Chhiākpo) (T).	...	...	Broken; as in Chiākpori.
Chānku (T).	...	...	A wolf.
Chigeb (T).	...	...	A chief officer who exercises magisterial power as well as collects revenue.
Chiamo or Jemo (T).	...	...	Goddess; as in Chiamo Lhakang, Jemo-Lha Ri.
Chionga Chiopa (Chhiopa) (T).	...	...	Chio ga = fifteen. Chiopa = to worship, also an earthen figure triangular in form. Chionga Chiopa is a festival observed by Tibetans on the day of the full moon in the first month of their year or about the middle of February.
Chipi (Chhipi) (T).	...	...	A small quadruped.
Cho (T).	...	...	A deer.
Choga (Tur).	...	...	A loose garment or long overcoat reaching to the feet.
Choi (T).	...	...	A grass which yields yellow colour.
Chongju Saiwang (T).	...	...	A festival among Tibetans celebrated a month after the Chionga Chiopa or New Year festival.
Chu (T).	...	...	A stream, a river, or water; as in Di Chu.
Chuchan (T).	...	...	A hot spring; as in Dam Chuchan.

\* A horse belonging to a common man is called Ta.

*Vocabulary of certain words, affixes &c., occurring in the Report.—(Continued),*

Churtan (T).	...	...	A kind of temple within which images, religious books and other objects of veneration are placed.
Daba (T).	...	...	A monk, a scholar, a disciple. (See note to the word Gisi in this list).
Däg (T).	...	...	A rock; as in Däg Kärpo.
Dai Pon (T).	...	...	A high military officer.
Däloi (C).	...	...	Properly chief officer. A commandant of Chinese soldiers who also exercises magisterial authority.
Dam (T).	...	...	A swamp; as in Lingdam.
Dau (T).	...	...	A kind of grain, called kotu (kütu), and phäpar or phäpra in India.
Demo* (T).	...	...	A brown bear.
Deodār (S).	...	...	A species of the pine.
Dhoto (T).	...	...	A place to which corpses are removed to be cut into pieces and thrown to kites and crows.
Di (T).	...	...	Literally mixed. Confluent streams; as in Di Chu.
Do (T).	...	...	Pair. Junction of two rivers; as in Kegudo.
Doag Kai (T).	...	...	One of the three dialects spoken in Tibet. (See Bodh Kai and Khām Kai in this list).
Dong (T).	...	...	A wild yak.
Dong or Dongu (T).	...	...	A village; as in Margen Dongu, Urong Dongu.
Dorje Phāmo (T).	...	...	The name of a goddess.
Dug (M).	...	...	A Mongolian weight equal to about 1 qr. 4 lbs. avoird.
Dukha (T).	...	...	Du = a boat, and kha = mouth, source. Dukha = a ferry; as in Samba Dukha.
Dungbura (T).	...	...	Dung = shell, and Bura = blown; as in Dungbura Chadamo.
Dunkur† (T).	...	...	A noble; a landlord.
Dzong (T).	...	...	A fort.
Gāng (T).	...	...	Rock, also ice; as in Rinchengāng, Ata Gāng pass.
Garpon (T).	...	...	The chief of a caravan.
Giachug (T).	...	...	A rest-house for Chinese officials.
Giakhang (T).	...	...	A stage-house for Chinese officers.
Gisi or Gibsi† (T).	...	...	Literally learned. A degree next above that of Gilong.
Giu (T).	...	...	Neighbourhood, vicinity; as in Nu Chu Giu.
Goa (T).	...	...	A chamois.
Gol (M).	...	...	A river; as in Naichi Gol.
Gom-pa or Gon (T).	...	...	A monastery. Gonchen = a large monastery.
Gur (H).	...	...	A coarse kind of sugar made into cakes or balls of different sizes by boiling cane juice.
Gyalbo (T).	...	...	A prince, a chief.
Gyān (T).	...	...	High, i.e., that which can be seen from a distance; as in Gyāntse.
Hap (T).	...	...	A mouthful; as in Hapchukha.
Hāra (M).	...	...	Black; as in Hāra Nor.
Harmo (M).	...	...	A forest tree and its fruit.
Hāze (T).	...	...	A fox.
Hu Hu (C).	...	...	The Muhammadans of China.
Humbu or Ombu (T & M).	...	...	Tamarisk.
Ikhe (M).	...	...	Large; as in Ikhe Tsaidam.
Jam or Jām (T).	...	...	A bridge; as in Giokjam, Jām Pon.
Jām Pon (T).	...	...	A custodian of bridges in a district.
Jāng (Jiāng) (T).	...	...	Northern; as in Jāng Tālung.
Jhāsa (M).	...	...	A chief or ruler.
Jhio (T).	...	...	A lord; as in Jhio Sākya Muni, Gārto-jhio.
Jing (M).	...	...	A Mongolian weight equal to about 1½ lbs. avoird.
Jobo or Jopho (T).	...	...	The male of cross breed between a bull and a female yak or between a male yak and a cow.
Jomo (T).	...	...	The female of cross breed between a bull and a female yak or between a male yak and a cow.
Kacha (H).	...	...	Made or built of mud or sun-dried bricks.
Kāsta (A).	...	...	A caravan.
Kai (T).	...	...	A language, dialect.
Kāli (H).	...	...	The name of a goddess of the Hindus.
Kang or Khān (T).	...	...	A house; as in Romkang, Chenkang, Khānsar.
Kankar (H).	...	...	A kind of limestone. Gravel.
Kar or Kärpo (T).	...	...	White; as in Dongkar, Däg Kärpo.
Kauli (C).	...	...	A kind of grain.
Kha (T).	...	...	Source, mouth, also snow; as in Nāg Chu Kha.
Khām Kai (T).	...	...	One of the three dialects spoken in Tibet. (See bodh Kai and Doag Kai in this list).
Khatak (T).	...	...	A thin cloth made of silk or from the bark of a tree.
Khor or Khorlo (T).	...	...	Literally a circle. A cylinder used by Tibetans while repeating their prayers.

\* There are two kinds of the brown-bear in Tibet, one called Chhingde and the other Mide.

† The chief noble families in Tibet are:—Saudu Photāng, Daring, Seta, Bhandi Shia, Raga Shia, Lhalu, Yutok and Poti Khānsa.

‡ The degrees in descending order are those of Lama, Khanpo, Umze, Gisi, Gilong, Gichu, and Daba which last is also a general term applicable to all the inmates of a Gom-pa. A Gegu is an officer who has the management of a Gom-pa and who also exercises magisterial power over the inmates except the Lama.



*Vocabulary of certain words, affixes &c., occurring in the Report.—(Continued).*

Khorchen (T).	...	...	A large Khor or Khorlo. A temple having a Khorchen or large Khorlo.
Khua (M).	...	...	The bank of a river; as in Maurusen Khua
Khuthul (M).	...	...	A pass.
Kiāng (T).	...	...	A wild ass.
Kiāring Kuring (T).	...	...	Irregular; as in Tso Kiāring Kuring.
Kodo* (T).	...	...	A small grain known as Mandwa in India
Koko or Khokho (M).	...	...	Blue; as in Koko-shuli, Koko Nor.
Kulath (H).	...	...	A kind of pulse
Kurs?	...	...	An ingot of silver = about 150 rupees Indian currency. (See Tamima in this list).
Kutung (T).	...	...	A hollow monument of metal, in shape like a churtan, raised over the body of a Lama after his death.
Kyi (T).	...	...	Source; as in Kyi Chu.
La (T)	...	...	A pass, a hill; as in Nub Kong La.
Lama (T).	...	...	A high priest or religious teacher in Tibet.
Lamathologa (M).	...	...	Round like Lama's head; thologa = head.
Lambardār (U).	...	...	The owner or headman of a village or villages who is responsible to Government for payment of revenue.
Len (M).	...	...	A Mongolian weight equal to about 1 oz. 5 dr. avoird.
Lha (T).	...	...	A god; as in Lhakang.
Lhakang (T).	...	...	Lha = a god, and kang = a house. A temple.
Lhāsa (T).	...	...	Lha = a god, and Sa = land. Name of the capital of Tibet.
Lho (T).	...	...	South; as in Lho-yul, Lhokha.
Li (Li) (C).	...	...	A measure of length equal to about 390 yards.
Ling (T).	...	...	A continent, an island, a division; as in Darjeeling.
Linga (T).	...	...	A garden; as in Dabchilinga
Lung (T).	...	...	A valley; as in Khamlung, Talung
Ma or Mar (T).	...	...	Red; as in Ma Chu, Chu Mar.
Mandwa (H).	...	...	A kind of grain.
Māne† Ringbo (T).	...	...	Māne = consecrated stone heaps or stone walls. Ringbo = long.
Mantra (S).	...	...	A sacred formula.
Masūr (H).	...	...	A kind of pulse.
Matar (H).	...	...	Pea.
Mo (T).	...	...	Lower; as in Po me. (See To in this list).
Mide (T).	...	...	One of the two kinds of the brown bear. (See note under Demo in this list).
Mo (T).	...	...	Female, woman. Denotes female sex; as in Lhāmo, Phāmo.
Molam Chemo (Chhemo) (T).	...	...	Molam = prayer, and Chemo = great. The month of asking blessing, i.e., the first month of the Tibetan year.
Muni (S).	...	...	A holy man, a saint; as in Jhu Sakya Muni.
Na (T).	...	...	A wild goat.
Nadamo (M).	...	...	The other side, opposed to Chadamo; as in Dungbura Nadamo.
Nag (T).	...	...	Black; as in Nag Chu, Rinag.
Nāla (H).	...	...	A stream, a rivulet, a watercourse.
Nam (T).	...	...	The sky; as in Nam lake.‡
Namaga (M).	...	...	A swamp; as in Chakangnamaga.
Nanda or Namad (F).	...	...	A kind of coarse woollen cloth, such as is used in making saddle-pads. Felt.
Nang (T).	...	...	Within the limits of; as in Pen-nang Chu, Chamchunāng.
Nangba§ (T).	...	...	One of the two sects of the Buddhists of Tibet.
Nankhazod (T).	...	...	Nankha = heaven, and zod = storehouse. Name of a cave temple.
Ne (T).	...	...	A kind of barley.
Nhambu (T).	...	...	A kind of woollen cloth.
Nhen (T).	...	...	A wild rocky mountain sheep. The Oris Poli?
Ning (T).	...	...	Heart; as in Tso Ning.
Nub (T).	...	...	West; as in Nub Kong Pass.
Nor (M).	...	...	A lake; as in Hāra Nor, Tengri Nor.
Obo (M).	...	...	A place of worship where a number of flags or poles with strips of cloth attached are erected.
Onbo (T).	...	...	Blue; as in Tso Onbo.
Padam?	...	...	A kind of fir tree. Pencil cedar?
Paka (H).	...	...	Made or built of burnt bricks or stones.
Paldan-Lhāmo (T).	...	...	The name of a goddess.
Patti (H).	...	...	A division.
Pekang (T).	...	...	A kind of mustard.
Phingba (M).	...	...	A kind of coarse woollen cloth used for making tents. (See Chhingba).
Phug (T).	...	...	A cave; as in Riplug.
Pon (T).	...	...	A master; as in Jāmpo.
Pyjama (P).	...	...	Literally a dress for the lower limbs. Trousers, drawers.
Rabdun (T).	...	...	Bab = a ford, and dun = seven; as in Di Chu Rab Dun.
Rāja (S).	...	...	A king.

\* A small grain of this very name, but quite different from Mandwa, is raised in India.

† A Khorlo is sometimes called Māne.

‡ The Mongolians call it Thungkari (Tengri) Nor.

§ The other sect is called Chiba or Bambu. Sub-divisions of the Nangba sect are Ningma, Sakia, Gūba and Gilukpa.

*Vocabulary of certain words, affixes &c., occurring in the Report.—(Continued).*

Rākshas (S).	...	...	A demon.
Ram (T).	...	...	Indigo; also a kind of grass which yields blue color.
Ri (T).	...	...	A peak, a hill; as in Rinag, Jemo-Lha Ri.
Rigong (T).	...	...	A rabbit.
Ring-bo-che (T).	...	...	A title of dignity with which the Lamas and Gyalbos and sometimes gentlemen of ordinary rank are addressed and spoken of.
Rito (T).	...	...	A place of retirement for religious contemplation.
Romkang (T).	...	...	A cemetery. Ro = a dead body, and kang = a house.
Rong (T).	...	...	A ravine, a defile, also a warm country; as in Rongbacha, Urong Dongu.
Sākya* (T).	...	...	Or Jhio Sākya Muni is the Shakya Muni of India.
Sāndo (T).	...	...	A disease among animals in Tibet.
Sang (T).	...	...	Incense; as in Lhāsang.
Sange Kuthong (T).	...	...	Sange = Bodh or Buddha, Ku = image, and thong = 1,000. A sacred place near Saitu.
Sar (T).	...	...	New; as in Khansar, Dongsar.
Sardār (P).	...	...	A chief or a headman.
Sarson (H).	...	...	A kind of mustard.
Sattu (H).	...	...	Parched grain ground into flour and made into paste.
Shān (T).	...	...	A tree.
Shiān-u (T).	...	...	The civil and magisterial officer of a district.
Shiar (T).	...	...	East; as in Shiar Gang pass.
Shibdag (T).	...	...	The protecting god. Properly the beloved god or the god who is honored and loved in preference to other gods.
Shingcha (T).	...	...	Root of a plant exported to China for coloring silk; also said to be used as medicine in China.
Shio (T).	...	...	On ground; as in Bhānāgshio.
Shugshing (T).	...	...	Shug or Shugu = paper, and shing = tree, wood. The bark of a plant used for making paper.
Siga (T).	...	...	A village held as a grant; as in Parisīga.
Taichun (T).	...	...	A kind of pulse.
Tamīna (T).	...	...	An ingot of silver equal to about 156 rupees, Indian currency: the same as Kurs.
Tang (T).	...	...	A plain; as in Ba-tang, Li-tang.
Tanka† (T).	...	...	The name given to Tibetan silver coins.
Tānthu (C).	...	...	Men with white turbans.
Taru (T).	...	...	A bush and its fruit.
Ta-sam (T).	...	...	A staging place where officials halt and change horses.
Ten (M).	...	...	A Mongolian weight equal to about 3 cwt. avoirdupois.
Tengri (Thingkari) (M).	...	...	The sky; as in Tengri Nor ‡
Thābu (M).	...	...	Five, as in Thābu Tsaidam.
Thain (C).	...	...	Literally the sky. A Chinese officer.
Thok or Thog (T)	...	...	Roof; as in Donthok.
To (T).	...	...	Upper, opposed to Me; as in Po to.
Tola (H).	...	...	An Indian weight equal to 180 grains.
Tsaidam (M).	...	...	A place of trade or market; as in Baga Tsaidam.
Tsang-po§ (T).	...	...	A large river.
Tse or (Tsai) (T).	...	...	Above ground; as in Gyāntse, Chai or Po-ta-la.
Tso (T).	...	...	A lake.
U (T).	...	...	The middle; as in U-Tsang.
Ulang (M).	...	...	Red; as in Ulangmiris.
Urd (H).	...	...	A kind of pulse.
Whang (C).	...	...	A chief or ruler higher in rank than Beli.
Yi (T).	...	...	A wild cat.
Yul (T).	...	...	Place, province, country; as in Zayul, Lhoyul.
Zamīndār (P).	...	...	A landholder.

\* Also a sub-division of the Nangba sect of the Buddhists of Tibet. This sub-division takes its name from a large monastery west of Lhāsa.

† Compare Tanga Safed of Turkestan equal in value to about four annas, Indian currency. Also the Bengal 'Taka'.

‡ The Tibetans call it Nam. (See Nam in this list).

§ Tsang-po is also the name of the Nari-chu, and in fact any large river may be called Tsang-po.



*Account of the Lower Tsang-po by the Mongolian Lama Serap Gyatsho during 1856-68, as related to Lama Ugyen Gyatso, Sub-Inspector of Schools and late Explorer, Survey of India. Compiled by Colonel H. C. B. Tanner.*

[An account of the Lower Tsang-po by the Mongolian Lama Serap Gyatsho 1856-68. His narrative is confined chiefly to a list of names of monasteries, sacred places and villages, with an occasional digression into history and descriptions of wild beasts, animals &c., and throws little light on the geography of the Tsang-po. Moreover it is based on information acquired from 20 to 30 years ago, and must be accepted with caution. Nevertheless from the information, such as it is, combined with the account of Kintshup, (a more recent explorer,) Colonel Tanner was enabled to compile a sketch map of the course of the Lower Tsang-po and thus furnish the first contribution to the geography of that unknown tract].

1. The following information regarding Pemakö, Rinchenpung and the lower Tsang-po river was related by the Mongolian Lama Serap Gyatsho, at the request of Lama Ugyen Gyatso, and confirms in many particulars the narrative of Kintshup Bhutea which follows. This Lama Serap Gyatsho came from China in the year 1856 and settled in the above stated places for twelve years, after which he left in the year 1868. During that period he used to live at Kongbo in the summer and in the winter at Pemakö.

2. At that time the following monasteries existed in the Pemakö district, *viz.*, Dorjiyu Dzong, Marpung, Lekpung, Mendeldem, Phuparong (Pupa Rong), Kongdem, Bholung, Chamna, Kyongsa, Nartong, Rinchenpung, Tsenchuk, Gyapung, Giling and Dehmu (Temo); with the exception of the last five all are situated on the west or right bank of the Tsang-po.

3. The monastery called Dorjiyu Dzong was erected by Lama Tertondorjithokmi, and the faith of the monastery is *Nyingmapa*\*. The monastery Lekpung was erected by Lama Ugyen Dichhenlingpa, but remained unrepaired for a long time, and was restored by this Mongolian Lama in the year 1859, when he was there.

4. The Rinchenpung monastery was erected by the father of the Lama Dichhenlingpa, whose father was Lama Ugyen Dodulingpa, but many years after the erection it fell to ruins, and was also restored by this Mongolian Lama. The faith of all these monasteries is *Nyingmapa*, except Chamna and Dehmu (Temo) which are under the Tibet Government.

5. There are from 10 to 30 monks in the monasteries, *i.e.*, some hold 10, some 20, some 30, except Chamna and Dehmu (Temo). In the old list of number of villages, inhabitants, monks and monasteries, it is written that there were 500 houses of the villagers and 500 monks in each of these two monasteries, but now the Lama believes that there are more inhabitants.

6. When the Mongolian Lama was at Pemakö, all the lands from the Doshing (Pass) and Dehmu (Temo) La passes up to Dangam village were under the rule of Powa Kanam. Dangam village is the lowermost part of Pemakö, and is situated on flat and level ground on the east† of the Tsang-po. It is at a distance of two or three days' journey from Ma-yum; the road follows the course of the Tsang-po. The Mongolian Lama never travelled beyond Dangam village, but he heard of a short-cut of two stages to Tsäri from that village.

7. Some years before the arrival of the Mongolian Lama at Pemakö, in the time of Shapeh Shata, a war took place between the Tibet Government and the king of Powa Kanam, in which the latter was beaten; he then made a treaty and signed an agreement to pay a tribute of 130 maunds of butter per annum to the Tibet Government. The king of Powa Kanam was independent of Tibet before the war. The tax which he agreed to pay would not come to much, even if he collected one pice per year from each house, for he had six *Lungchen* (large valleys) under him. The name of the king who fought with the Tibet Government was Thangteopontak.

8. The Lama lately heard that a second war broke out between the above parties, in which the Rāja was thoroughly beaten and his land was taken possession of by the Tibetans, and that now-a-days, he has only the power of a Jongpon or *Zamindār*, though formerly all the valleys of Pemakö were under his rule, except Chamna, Pemaköchung, and Dehmu (Temo) which were under Tibet.

\* Probably the same as *Naugba*,—one of the two sects of the Buddhists of Tibet (see P. Kihsen Singh's Report 1879-82).

† Evidently a mistake for west.

9. Description of the sacred places on the east of the Tsang-po, viz., Taphak (Tapak), Kondü Potrang, Guru Duphuk, Gonpu Manig, Chu Lhakang and Tsangpehneh. The latter is a high slender snowy mountain which seems like a white column of cloud rising in the sky.

10. Names of the sacred places on the west of the Tsang-po, viz., Horasharkichurtan. Mendeldem's sacred place, and Buddu Tsiphak's sacred place: besides the monasteries and sacred places there are innumerable sacred things, such as books, images and precious articles.

11. From Gyäla Dzong if you proceed towards the source of the Tsang-po in a westerly direction you will reach Pheo village after a day's journey. This village is situated on the bank of the Tsang-po, whence if you continue in the same direction for two days you will reach the Doshing pass, which is ascended from Pheo. Along the range on which the pass is situated there is another called the Nam La which is much higher. This latter remains covered with snow all the year round. The former also remains covered with snow the whole year, except during the months of July and August; it is the shortest and easiest one to Pemakö and it takes four days from it to reach that place. Though the last named pass is very difficult and distant yet there are some sacred places on the way, and many pilgrims go by it in the summer time for the sake of visiting the sacred spots.

12. The following sacred places are met with on the Nam La route:—Buddu Tsiphak, Mendeldem, Kongdem Gom-pa, Phuparong (Pupa Rong), Lhotoi and Lobang. It takes nearly five days to travel from the Nam La (pass) to Lobang or Lekpung monastery, whence after 1½ days' journey Pateng village is reached. There are some high snowy peaks on the range near the Doshing pass and there are two high snowy mountains on the upper part of the Nam La (pass), and their names are Riwunamchabarwa (Namcha Barwa) and Kongla Karbu (the former name means mount thunderbolt). There are some high snowy mountains on the north of the Tsang-po, Gyalbupairi (Gyäla-Peri) is the highest.

13. There are about 1,600 houses of the *Chingmis* who were the aborigines of south-eastern Bhutän, but emigrated from their original abodes and settled in Pemakö; some of them say that nearly a century had passed since their arrival, and others nearly 60 years.

14. There are nearly 500 houses of Tibetans who emigrated from Kongbo and about 100 houses of *Khämpas* from Khäm, These Tibetans who have emigrated from Kongbo and Khäm say that nearly two or three generations have passed since their settlement.

15. There are *Mönbas* (forest living) and *Lhobas* (barbarian) on the east side of the Tsang-po who are the aborigines of the place, and there are about 40 houses of the *Mönbas*.

16. The Mongolian Lama on being asked as to how he knew the exact number of houses, replied, that he used to get one anna from each house per year for he was their Grand Lama and they used to call him *Gyalama*, which means Chinese Lama; besides, he got some quantity of butter per year, so he counted the number of the houses from the number of coins he received from the houses. At that time the *Lhobas* had no faith in Lamas or in religion, except some few who reverence Lamas. At the time when the Lama resided there no kind of Jongpons or rulers existed, except some headmen, such as *Mandals* who are chosen by the inhabitants and who collect all the taxes from the villages.

17. Below the Rinchenpung monastery there are two villages called Khangkyo and Midok. The sacred place of Gonpu Manig is between the junction of the Tsang-po and the stream of Powa. Rinchenpung monastery is situated on the breast of a hill. There is a road to Kondü Potrang from Rinchenpung and on the way there is a sacred place on the left side, which is honoured by the Tsang-po. Another holy place is situated below the last one, whence, ascending a spur of a snowy mountain, the Zikla (tiger) pass is reached, and thence descending a traveller's halting place is found; after this the Takla pass has to be crossed and Kondü Potrang is reached.

18. From Kondü Potrang, Powa Kanam is visible on the north, Kongbo on the west, the snowy mountain of Lhokata on the east, and many snowy mountains towards the north. The Kondü Potrang is on the top of a snowy range and there are four lakes around it. Any one visiting this place turns from the right and makes a circuit of the lake, of which three are on the outside of the road and one on the inside. All the distant places are visible from here. It is covered with snow all the year round: a man can go round it twice in a day. A long steep spur of a high mountain extends from the east and strikes the junction of the Tsang-po and Pohtungdo (Pablung) Chu rivers; therefore, the latter flows towards the south-west. By proceeding towards the source of this large river the palace of Powa Kanam may be reached in three or four days. The name of the palace is Shawa Phodang (Showa).

19. The narrative accounts of the Mongolian Lama regarding the names of places and

villages and the distances from the Dehmu (Temo) La and Doshing passes to Ma-yum agree with that of Kinthup's report.

20. The following are his descriptions of the wild animals and birds of Pemakö:—  
 "There is a large animal called *Khyimyak*, which when killed weighs about eight maunds, there are many deer, wild men, lions (the colour of the lions is bluish-grey), tigers, leopards, wolves, harts, musk-deer, three-headed venomous snakes (having spotted black colours), wild boars and many sorts of monkeys." The Mongolian Lama says that he saw the skin of a snake which was eight fathoms in length and eight spans in width! There are silk-worms, as also many sorts of birds the names of which he did not know, except the following, viz., *Ugyenpelung*, *Ganbutulku*, *Gomchhenkyakpa Shorshor*, *Singja-ukpa* and the Cuckoos.\*

21. Rice, oats, barley, *menchak* or *mandwa* (a seed resembling that of mustard), maize, *moinneh* and all sorts of pease grow in Pemakö: many sorts of vegetables are obtainable.

22. The Pemakö district comprises six large valleys called *Powalungchhentuk* (Po is the north-easterly part of Pemakö) and eighteen other great valleys called *Lolungchhenchopgye*. There are three different kinds of *Lhobas*, viz., *Lo Karpo*, *Lo Nāqpo* and *Lo Tawa* or *Lo Khabta*. The *Lo Karpo* means white and little civilized. The *Lo Nāqpos* live on the lowermost part of Tsāri and Pemakö near the borders of the plain. *Lo Nāqpo* means black and little civilized. The Mongolian Lama heard that the *Lo Tawas* live on the lower part of the Tsang-po on the east bank, but he did not see a single man with his own eyes. He was told, he says, that these *Lo Tawas*, or *Lo Khabtas*, kill the mother of the bride in performing their marriage ceremony, when they do not find any wild men, and eat her flesh. *Lo Tuwa* means stripped *Lhobas*, or quite barbarous men.

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\* Some of the statements in this para will of course be taken *cum grano*: they however go to show how credulous an individual the Mongolian Lama was.



***Kinthup's Narrative of a Journey from Darjeeling to Gyāla Sindong (Gyāla and Sengdam), Tsāri and the Lower Tsang-po, 1880-84. Compiled by Col. H. C. B. Tanner.***

[Narrative of a journey from Darjeeling to Gyāla Sindong (Gyāla and Sengdam), Tsāri and the Lower Tsang-po by Kinthup 1880-84. Kinthup, the author of this narrative, is a native of Sikkim who had previously accompanied the explorer Nem Singh (an employé of the Survey of India) to Gyāla Sindong, and who has since traversed Bhutān with Kinzin Nimgyl, another Indian explorer, of whom more hereafter. He went as servant or companion to a Chinese Lama whom the late Captain Harman, R.E., sent to Gyāla Sindong to throw marked logs into the Tsang-po at that place, having previously arranged for watchers to be stationed at the junction of the Dihāng and Brahmaputra, to ascertain whether the logs came down by that course, and so to settle beyond possibility of doubt the identity of the Tsang-po with the great river of Assam. This plan failed owing to the bad faith of the Lama who sold Kinthup into slavery and returned to his own home in China. Kinthup managed to escape and returned to Darjeeling after an absence of four years, having traced the course of the Tsang-po down to Onlow or Olon, nearly 100 miles lower than any previous explorer, and to within one march of Miri Padam (Domro or Padam) which is said to be only 35 miles from the nearest plains of India. This man not being a trained explorer, the information he brought is not based on a route-survey, and can only be regarded as a *bonâ fide* story of his travels related from recollection two years after his return. The account was translated into English from the original by Norpu, an employé of the Survey Department, and subsequently compiled by Colonel Tanner. A short summary of it by that officer appeared in the General Report of the Survey for the year 1886-87.]

1. The Explorer Kinthup crossed the Donkhya (Dongkhya) pass on the 7th August, 1880, and halted two days at the Cholamo lake

*Halting Places and Estimated Distances.*

Donkhya pass to Gyāntse	...	90 miles.
Gob-shi	...	18 "
Rālung	...	22 "
Nang kar-tse Dzong	...	30 "
Pe-de Dzong	...	15 "
Nyabsotukha ferry on the Tsang-po	...	26 "
Chu-shul	...	6 "
Dong-kar	...	25 "
Lhāsa	...	12 "
Ke-deshe Dzong*	...	30 "
Ta-nang	...	15 "
?	...	15 "
Tsetang	...	18 "
Makmoi	...	9 "
Rongchakar Dzong	...	6 "

to arrange for transport to Gyāntse. Whenever questioned about his destination he replied that the Lama with whom he was travelling was going to pay a visit to his sister, and that he was accompanying him. At Cholamo the Lachung and Gyāntse traders exchanged their goods, and he left with the latter for Gyāntse on the morning of the 10th August, reaching Gyāntse in seven days (90 miles). He left Gyāntse on the 23rd disguised as a pilgrim, and carrying *khurshings* (or cradles for packs) after the manner of pilgrims, and after passing through Dong-kar, where the Lama's nephew lived, he reached Lhāsa on the 1st September. While at Lhāsa the Lama visited Ser-ra monastery, where he feasted his old companions and remained six days.

Kinthup and the Lama then returned to Chu-shul by boat down the Lhāsa or Kyi Chu river, whence they took another boat and reached Ke-deshe Dzong, on the southern bank of the Tsang-po opposite Dorjen Thag: excellent clothes and blankets are made at Ke-deshe. On the 20th they stopped at a small harbour with the great Samaye monastery 4 miles to the north west. The Lama fell ill at Tsetang, and lived with a Chinese friend for 20 days. Kinthup meanwhile had to cut grass for the Lama's horse and was very badly treated for a time; but he bore all his bad treatment with patience fearing lest his position might become more troublesome if he resented it. From Tsetang they went to Makmoi and Rongchakar Dzong (50 houses). About a mile from the latter place a stream issues from the front of the Putrang pass and running through Lhagyari, joins the Tsang-po. The soil is very productive (Up to or near this point Lama Ugyen Gyatso's route was followed, but here it turns off to the north-east).

2. At Lhagyari Dzong there are about 500 houses which are under the rule of the Jongpon whose territory commences at the Putrang pass and extends to Dakpu.† There are two gold mines at the back of Lhagyari Dzong, whence a stream issues which joins the Putrang Pass drainage, which they crossed several times.

\* *Via* the Tungo pass, 16330 feet.

† Probably the same as Nang Dzong of Nem Singh, and from which probably the country to the south is known as Takpo.



3. They halted at a *Jikkyop* where a house has been erected by the Tibetan Government for pilgrims and travellers as a shelter from storms and the possible attack of wild animals. *Jikkyop* means "to protect from fear."

4. They reached a second *Jikkyop* after crossing the Putrang pass, from the top of which they saw the snowy mountains of Dalakham-pa to the north-east, and the Gokhar pass of Lhāsa to the north-west. Some of the peaks of Tsāri were visible but they were so far away that it was impossible to recognize them.

5. On the 16th October, 1880, they reached Rizur where they obtained a night's shelter in the house of a Lama who was a priest of the Ser-ra monastery (near Lhāsa). Kinthup was badly treated at this place.

6. At Lamda, 10 miles further, Kinthup reports that there are about 40 houses, and the inhabitants are chiefly employed in taking musk from Kongbo to Lhāsa for sale. The soil yields good crops of wheat and barley. There were the remains of two or three ruined villages, and some cultivation, between Rizur and Lamda. The stream which rises at the back of the Putrang pass followed Kinthup's line of route. On the 18th October they stayed at a temple, where there were about 15 houses and two or three watermills.

7. At Dakpu Dongpa\* they found about 160 houses under the rule of a nobleman of Lhāsa whose title is *Dangkkor*. The Tsang-po is half a mile to the north of the village, and the stream which flows from the Putrang pass joins it about 1 mile to the west. They could only afford a day's halt here as their provisions were exhausted. From beyond the fort of Gyatsa Dzong north of Dakpu a stream runs down to the Tsang-po.

8. On the 20th October, passing Ani Gom-pa, where there is a nunnery with about 50 nuns, they spent the night in a cave. There was no village at hand; only the big monastery of Dakpu Dala Kambu built on a rock (at a distance of about 2 miles from the cave), where there lived 300 or more priests. The next place they reached was Nang Dzong.

9. Nang Dzong is described as a building with fortified walls whence all the roads to Kongbo branch off. No one can go to Kongbo without passing this *Dzong*, to which a monastery is attached. At some distance to the N. W. is Pari Chôte village, where the great Lama named Ngawang Lobzang, the Dalai Lama, was born, and a moderate sized monastery is also here with about 150 priests. At Pari Chôte many traders called *Golokpas*† come with large herds of yaks to trade, and annually visit this place in the months of October and November, with merchandize chiefly consisting of salt and wool. Many others trade in barley and rice, who come from the lower part of Kongbo in the same months every year. In this place a Tibetan officer called *Dedupa* is appointed by the Government, whose sole duty it is to collect as much rice as possible, no one else being allowed to buy rice. Many musk and other deer are found in the hills about here. At the next *Jikkyop* which they reached they noted a stream which issued from the interior of Nang Dzong and flows in a northerly direction, joining the Tsang-po at a distance of 5 chains from Nang Dzong. The Tsang-po which was on their left flows towards the east. The explorers ascended the Kongbo Nga La (pass) and found another *Jikkyop* about half way up the ascent, where two persons are placed whose duties are to carry letters from one *Jikkyop* to another, and to help travellers in crossing this pass which is very high and dangerous. On it there are many barbarians, and many herds of wild sheep, called *Rāgu* or *Ragowa*, are to be found on this mountain, each herd consisting of about 500 sheep. This mountain remains snow-clad in winter, and constant gusts of wind cause the snow to fly about in summer. It is very difficult to cross during stormy weather.

\* Probably the same as Takpo monastery of Nem Singh, the distance of which from Tsetang is by that Explorer about 88 miles.

† Most probably inhabitants of Golog, in the Amdo country, who according to Sarat Chandra Das all "follow brigandage as their sole profession" and whose "chiefs and heads of villages are all hereditary brigands from ancient times."

10. On the morning of the 25th October they crossed the mountain and descended, and half way down came across another *Jikkyop* where there lived a family of eleven members, who asked their destination. They replied that they were going on a pilgrimage to Kongbo. After a further descent of 2 miles they met a stream running from south to north, which joins the Tsang-po at about 2 miles distance. After a walk on level ground from the foot of the mountain they reached Dong Kargon\* where there is a *Dzong* with a monastery attached, both buildings having their foundations upon a huge rock, and the monastery containing more than 500 priests. The houses of the inhabitants are situated on flat ground some way below the *Dzong*. Here the Tsang-po flows in a northerly direction. They travelled towards the north, parallel to the Tsang-po, and slept that night under a tree.

11. At Tsung Shod where there are about 10 houses a road branches off over the Bimbi La (pass) to Tsäri. They met a stream on the way issuing from this pass which joins the Tsang-po, which was left to the north of their route.

12. They next stopped at Kyimdong in order to collect provisions by means of begging. There are about 10 houses at Kyimdong and some lead mines; the roads to Tsäri, Pächakshiri† and Lhāsa joining at this point. They kept their things in their host's house whilst they went begging for provisions.

13. At Thun Tsung they found many houses and good cultivation. Here they collected more provisions and went about 3 miles away to a monastery to beg. There is a large and beautiful temple at Thun Tsung having eight magnificent altars. In the monastery both men and women (*i.e.* priests and nuns) are allowed to preach and live together. They returned to Thun Tsung the same day after collecting food.

14. From Thun Tsung they again made a begging excursion to Bhal gom-pa, a monastery where the same customs prevailed, and returned the same day.

15. Next they went for a day's begging to Kum where there are about 15 houses. There they found the tops of the hills covered with wood, but the lower parts grassy.

16. Travelling onward to Bumkyimgog they counted there about 10 houses and spent two days collecting provisions; after which they returned to Thun Tsung where they stayed four months. The detention was owing to the Lama falling in love with his host's wife. Finally the state of affairs between the wife and the Lama became known to the host, and the Lama had to pay up Rs. 25 in compensation, an arrangement which was effected by Kinthup with great difficulty. They started from Thun Tsung on the 6th March, 1881, and after travelling about 12 miles they slept the night on the bank of the Tsang-po.

17. At Jaket (Chake) they halted a night finding only three or four houses there. On the opposite bank of the Tsang-po they counted about 60 houses and a monastery. Another day's halt was made at Orong and Gächa Dzongs. They crossed a stream about 4 miles from Orong and Gächa Dzongs which appeared to come from the direction of Tsäri, and noted another big stream at Lamdor. At this place there are about 20 houses, and they collected provisions by begging. After crossing the Tsang-po by boat at a distance of about 2 miles from Chamna they came to Gonsa where there is a temple and a monastery on the north bank of the Tsang-po which Kinthup now describes as on his right hand.

18. At Dehma (Temo) Dzong, where they halted for a day, there are about 100 houses and a monastery with 300 or 400 monks.

19. Passing Chu Lhakang, where there is a monastery and an altar, they came to Guru Chokhang (Guru Duphuk).

\* Probably Kongkär Dzong of Nem Singh at 10 miles beyond which according to that Explorer the Tsang-po turns to the north.

† Probably the country of the *Lepchas* (to the south) who according to Nem Singh call themselves *Pächakshiriba* in these parts.

20. This is a place named after a hermit who devoted many years to the contemplation of the deity, at a time when the place was full of monsters. All these monsters were turned to religion by the *Guru* who converted them into his disciples.  
*Guru Chokhang (Guru Duphuk)*, 6 miles.

21. From *Guru Chokhang (Guru Duphuk)* they went to *Gyāla* where there are 5 houses and a stream which rises in the north and joins the *Tsang-po* near by: they halted here three days, and discovered a short cut over the *Gyāla* pass by which travellers can go to *Kongbo Lunang* in summer.  
*Gyāla*, 5 miles.

22. At *Sengdam (Sindong)* there are the remains of three old monasteries, and a waterfall which drops from a height of about 100 feet into a stream which is not fordable in summer. They halted a day at this place.  
*Sengdam (Sindong)*, 5 miles.

23. Proceeding from *Sengdam* they reached *Götsang Dupu* which is situated on a rock, where the aforementioned *Guru* remained many years as a hermit. The *Tsang-po* is about  $\frac{1}{2}$  mile distant. They returned to *Gyāla* as there was no road to proceed further, the *Tsang-po* being on the travellers' left hand. There being a short road all along the valley of the *Tsang-po* they did not go to *Sengdam* on the way back to *Gyāla*. There are two streams at *Sengdam*, one on each side of it; both of them rise on the mountain of *Sengdam* which remains covered with snow during the whole year. In summer the stream which runs on the right of *Sengdam* swells so much that it sweeps away all the bridges that are built over it. The *Tsang-po* separates the monastery and *Dzong* of *Gyāla*. It is necessary to take a passport from the *Jongpon* of *Gyāla* in going to *Pemaköchung*, so they crossed the *Tsang-po* to get one from the *Jongpon*. The *Tsang-po* is crossed by wood and leather boats in winter, but in summer these boats are incapable of transporting men over it, so travellers have to swing by a rope which is stretched across. The traveller is first tied to the rope, and is then pulled over by a second rope from the other side. Passports have to be returned on coming back from this place.

24. *Kinthup* and the *Lama* stopped at a cave, the road between *Gyāla* and the cave being extremely bad, obliging them to ascend and descend many steep rocks through jungle and obstructions.  
*Nyukthang*, 5 miles.

25. They stopped at *Pemaköchung* three days in search of a road, but as they did not find one they retraced their steps. There is a monastery (with seven or eight priests) but no other house at *Pemaköchung*. The *Tsang-po* is two chains distant from the monastery and about 2 miles off it falls over a cliff called *Sinji-Chogyal (Shingche Chögye)* from a height of about 150 feet. There is a big lake at the foot of the falls where rainbows are always observable.  
*Pemaköchung*, 10 miles.

26. At *Nyukthang* they found neither house nor human being. The passport was returned at *Gyāla Dzong*, and our travellers crossed the *Tsang-po* to *Guru Duphuk* at the same place where they had passed over before.

<i>Nyukthang</i> ... ..	10 miles.
<i>Gyāla Dzong</i> ... ..	5 "
<i>Guru Duphuk</i> ... ..	5 "

27. At *Chu Lhakang* they found three worshipping places with images of incarnations, but nothing further of interest was met with in their route till they reached the *Dehmu* pass, at the foot of which they halted. Next day they crossed it and reached *Kongbo Lunang* where there are about 140 houses with good cultivation and three monasteries. Here a stream runs from the *Dehmu* pass; the land on the left side of the stream belongs to the *Pobas* and the right side to the *Dehmu Jongpon* and is part of *Tibet*. They crossed the stream at about  $\frac{1}{2}$  mile from *Kongbo Lunang*.

<i>Chu Lhakang</i> ... ..	6 miles.
<i>Dehmu Dzong</i> ... ..	10 "
<i>Dehmu pass</i> ... ..	20 "
<i>Kongbo Lunang</i> ... ..	15 "

28. At *Tongjuk (Tongkyuk) Dzong* a bridge is built over the stream and an old man checks persons passing over it who have not obtained the permission of the *Jongpon*. So they had to stop at the bridge about 1 mile from the *Dzong*, until the *Lama* went with the old man to obtain permission, whilst *Kinthup* stayed at the bridge, and hid his three compasses and pistol. The *Lama* returned after four days with the permission, so they secured their property and travelled on to the *Jongpon's* who gave them quarters with his servants and furnished them with some flour, meat and tea. On the morning of the 14th May, 1881, a servant of the *Jongpon* came to *Kinthup* and said:—"Well, my friend, the *Jongpon* orders you to "bring the things which you promised to give him". *Kinthup* replied that it would be impossible to give away Government property;

\* This does not agree with the map.

whereupon the messenger got angry and abused him saying—"Your duty is not to contradict but to obey". He took the pistol and one compass, and went to the Jongpon and gave them to him. After this the Lama again left Kinthup and stayed with the Jongpon for eight days. On the morning of the 24th, he returned and told Kinthup that he had some business which necessitated his going to Po-yul, but that he would come back after two or three days, during which time he instructed Kinthup to wait at the Jongpon's quarters. But Kinthup waited there more than two months. During his detention he was employed in stitching clothes. At length he began to suspect that the Lama had fled, and his suspicions were confirmed when, one day, as he was tending the horses of the Jongpon at Lhayé with a man who was well acquainted with him, he learnt that the Lama had sold him to the Jongpon, and had himself gone away to other countries. He understood then why the Jongpon would not let him go anywhere about the place. On the morning of the 6th October, 1881, the Jongpon ordered him to work in his house and to be his servant, and after some days took him there, where he had to work nearly two months more. After this he returned to the *Dzong* and was detained three months longer in slavery. But on the evening of the 7th March, 1882, he succeeded in escaping to Namding Phukpa. From there he made his way to Po-Toi-Lung (Po Trulung) where he met many *Poba* travellers and traders, who asked his destination and the object of his travelling. In reply he told them that he was going to the Jongpon's house on an errand; but he crossed the Poh-Tung-Dho Chu (Po Tsang-po) stream by the bridge, and ran away with his utmost speed as soon as the people had left the place. The Poh-Tung-Dho Chu (Po Tsang-po) stream issues from Phodangda La (pass) and here joins the stream which rises below Kongbo Lunang. At this point the road to Pemaköchung is quite impassable for four-footed animals.

29. The stream which comes from the pass above Kongbo Lunang joins the Tsang-po at a distance of 14 miles from Po-Toi-Lung (Po Trulung). Kinthup crossed the river about 1 mile from the junction and reached Dorjiyu Dzong. A monastery with 10 or 15 priests is attached to the *Dzong*. Many wild beasts of prey are found here, and the roads are very bad.

30 After leaving Dorjiyu Dzong he crossed to the east side of the Tsang-po at about 1 mile, and then ascended the hill of Dorjiyu Dzong and reached Pang-go. Here there is a monastery named Tsenchuk Gom-pa with about 30 priests and an incarnate Lama. He halted two days collecting provisions. The Tsang-po is about 1 mile from Pang-go.

31. Starting from Pang-go he came to a place called Pangshing, at one mile, where there are 15 houses. Then after crossing over level ground he fell in with a stream which flowed from east to south, and finally reached Khing Khing (Kengkeng), where there is a monastery with 25 priests.

32. Leaving Khing Khing (Kengkeng) he again crossed the Tsang-po at about 2 miles, leaving it on his left, i.e., on the east. Over the Tsang-po a rope is stretched on which men swing to the other side; it is called *Bring* in Tibetan. After walking 4 miles from the river he came to a monastery containing about 40 priests. The head Lama is appointed from Dalakhampa. Kinthup noted that here the Tsang-po flows to the south.

33. Following the course of the Tsang-po he met with one small monastery, one Lhanyer and 5 temples. Phuparong (Pupa Rong) monastery is about 1 mile from the Tsang-po. He again crossed the Tsang-po to the east and reached Tambu where there are many houses.


After ascending a steep hill he reached Rinchenpung, where there is a monastery and a newly erected *Dzong* with a stream running to its right.

34. It took him five days to reach Kondü Potrang, the names of the halting places being noted in the margin. These halting places are "inns" where travellers stay after their day's journey. At Kondü Potrang there is a monastery with 15 houses and a *Dzong*. From the top of the mountain looking to the north-east one can see Zayul and to the north-west Po-yul; to the east all the hills of India, and to the south all the hills of Teäri, but peaks could not be identified, being too far off.\* It took him four days to cross the mountain, but on the evening of the fifth he reached Kondü Potrang. This mountain can be crossed in summer until August, after which it is closed by snow. A man can make two circuits in a day round the top of the mountain where there are four lakes. When Kinthup returned to Rinchenpung it took three days only.

\* The Explorer is evidently mistaken here in his bearings which require the addition of a whole quadrant to set them right.

35. Starting from Tambu he crossed the Tsang-po at about 1 mile by a cane bridge, travelling to the west. 6 miles from the Tsang-po he reached Hora. Hora, 7 miles.

36. At Marpung he found a monastery with 15 nuns and 30 priests who were allowed to live together. On reaching Marpung Kinthup heard that men sent by the Jongpon in search of him had come to arrest him; he at once ran away to the monastery and bowed thrice at the foot of the Great Lama, and told him all that had happened and the cause of his flight from the Jongpon. In reply the Lama asked him his destination, and whether he had parents or not? Kinthup told him that he was an inhabitant of Tsungchungra and that he was going on a pilgrimage, and had no parents. He begged the Lama not to hand him over to his pursuers. They also came to the Lama five days after Kinthup, to take him back to the Jongpon; but the Lama at once wrote to the Jongpon stating that he would pay Rs. 50 to him for the value of Kinthup's life. It took ten days more to settle the matter. He served under the Lama for 4 months and 15 days after which he took a month's leave on the pretence of going on a pilgrimage. The first place he reached was Yortong (Yardong) where there are about 30 houses and a monastery: starting again from Yortong (Yardong) he crossed the stream which rises on the Doshing pass at about 2 miles, after which he ascended a hill and reached Pateng. Another 3 miles walk brought him to the Tsang-po which he crossed to the east. At Bipung he found about 25 houses.

37. Again he hid his things in a jungle, and went north-eastward to the monastery of Giling in pretended search of salt which is found on the flat ground hereabout. Giling possesses about 50 houses. He stayed here five days making the 500 logs, all one foot long, that he had been ordered to make by the late Captain Harman. The shape of the logs was something like this . Then he carried the logs on his back and hid them in a deep cave where no human foot had yet trodden. He then returned to the Lama after an absence of one month and four days and served two months, again taking leave for two months on the pretence of going to Tsäri on another pilgrimage; but he went to Lhāsa instead.

38. Passing Yortong (Yardong) he reached a point where the road branching from near Pateng joins with that of the Doshing pass. The Doshing pass stream joins another stream just after reaching Ani Pasam, where a bridge is built of stone and wood. Leaving Ani Pasam he ascended three miles and then proceeded over level ground till he reached the top of the mountain, which is snow-clad. There is an inn and a shelter cave between Ani Pasam and Pankangkongma. Kinthup followed the course of the Doshing pass stream flowing on the west. No four-footed animal can pass by this road. At Kungmen Gyalmu, 12 miles further, there is no house, nothing except a big lake: no trees are to be found higher up than this.

39. He next crossed the Doshing pass and at its foot found two cattle-sheds. At Pheodoshong there are about 15 houses, and the stream which he had followed joins the Tsang-po at about half a mile to the north of the village; another stream flows from the hill and joins the Tsang-po at half a mile from the village, the Tsang-po being on the north.

40. From Chamna he retraced his steps and reached Thun Tsung in eight days. At the foot of the Bimbi pass he found three cattle-sheds. From the pass he gained a grand view of many snowy peaks to the north. After crossing the pass he descended three miles and met a stream running on his left from north to south; he followed the stream and reached Pödzo Sumdo where the roads to Tsäri, Men Chhuna Dzong, and Kongbo join. The stream issuing from this pass joins that from the Gongma (Kongmo) pass. Here there are many houses and a wide plain. A stream flowing from north to south joins the one which Kinthup followed.

41. After an ascent of one mile from the plain a recess was passed containing four or five hermit houses. After another 1½ miles there is a Jikkyop where a man is kept by the Tibetan Government who gives a cup of wine to every traveller who may come that way. There are three or four cattle-sheds on flat ground about a mile from the

\* This does not agree with the map.

*Jikkyop*. Crossing the Totzen (Tsoka) pass the Totzen (Tsoka) village was reached, where there is a monastery and a big lake, with two hermits' houses at about 300 paces from the lake. Many musk-deer, spotted deer, and yaks are found on this hill. This pass is inaccessible after the months of October and November.

42. Returning from this place Kinthup followed the stream and crossed it at about ten miles from Pödzo Sumdo. Another stream flowing in an easterly direction joins it at the bridge where he crossed. From here he proceeded over level country to the monastery in which he found about 40 monks. There are about 15 houses and six cattle-sheds near the monastery. The soil yields no kind of produce.

43. After 3 days halt Kinthup proceeded to Tsäri where there is a high pass over which no woman is allowed to go. The reason assigned is that formerly a goddess, named Drolma, who wished to judge the moral behaviour of men and women, laid herself across the path-way at the summit of the pass. A man came by and found the road blocked by the goddess, who was disguised. So he asked her with kind words to get out of his way. In reply the goddess said, "My brother, I am so weak that I cannot stir; if you pity me, please find another road, if not, cross over me." On hearing this the man took a different road. After a short time a woman passed that way, and she also saw the goddess and told her to give way; the same reply was made by the goddess, but the woman crossed over her and went on. Therefore, from that day, women have been forbidden to pass over, and from that day the name of the pass has been known as Drolma Pass: no wood of any kind is to be found, and nothing visible save snow-clad hills. There is a *Jikkyop* where firewood, water, and food is kept ready for travellers, who are charged nothing because the *Jikkyop* is kept by the Government for the public benefit. Kinthup stayed one day there.

44. On his way from Mipa at a distance of 2 miles he came to a place named Kadothang where the afore-mentioned goddess kept her cattle. Even now there may be seen many stone pitchers, and the foot-marks of cows on the stones. From there after a mile's ascent he passed a *Jikkyop* where a cup of curds is given to every traveller. It is kept by Dakpu Dungpa; and the reason of his keeping it, as related to Kinthup, is because his daughter went over the Drolma Pass disguised as a man; on her way she was overtaken by an avalanche and killed. When the news reached the Tibet Government, the Dakpu Dungpa was fined. His fine consisted in this, that he should keep a cattle-shed at the *Jikkyop*, and give curds to travellers that came by the place. So to this day, he has to keep a cattle-shed and give a cup of curds to every passing traveller.

45. Starting on a level road he found another *Jikkyop* about 5 miles further, where every traveller gets a cup of wine, besides water and firewood, if he likes to cook food. Here there is a small lake. Ascending a hill from this point he could discern the plains of India. Again descending, he came to level ground on the other side, and found a stream which issued from the right side and ran in a south-easterly direction. On the journey to Tsäri by this route, no one is allowed to spit even, and the halting places are kept exceedingly clean.

46. He next ascended the Shangu pass where he found an inn about 300 paces from the top. The villages of Men Chhuna and Lo-yul, and the plains of India are visible from the summit. There are no horses or cattle here, nothing but wild animals, *surao*?, deer, musk-deer and birds. From this inn Kinthup proceeded on level ground until he reached a wide plain where there are cattle-sheds and inns, and also a small stream. Descending through a valley he reached Yüme (Yumey) where there is a monastery with 15 priests. The road which branched off from Tsäri joins here. There is a *Jikkyop* between Upper and Lower Yüme (Yumey). No one is allowed to shoot the wild animals of this place. Ascending the Yüme (Yumey) pass, Kinthup reached a *Jikkyop* where he found a cow-herd's house, and remarks that "there are many beavers here"; he probably means marmots. He halted the night in a *Jikkyop* where cooked food was offered for sale.

47. From Chösam (Chazam) there was a slight ascent to Choten Nakhom, where he ate his breakfast, and afterwards, still ascending, he crossed the Gongma (Kongmo) pass in a north-easterly direction. After crossing the pass, he reached the first *Jikkyop* of Tsäri. There are cattle-sheds at Choten Nakhom; the cow-herds bringing the cows up to the pass to graze. There is a large lake near the *Jikkyop*. All these places are covered with snow. A stream issuing from this lake joins the stream which flows from the Karam pass about 3 miles from the *Jikkyop*. He followed the Karam pass stream in a south-westerly direction. On the left side of the stream there is a big monastery and on the right about 30 houses.

48. At the foot of the Karam La (pass) there are many houses and cattle, with an old Dzong. The soil is poor.  
At the foot of Karam La (pass), 16 miles.

49. At Dok he halted in a solitary cow-herd's house: on resuming his journey he noted a stream flowing in a south-easterly direction from a snowy mountain, the distance between the stream and the road being about 2 miles. At midday he came across a cattle-shed and then descending some distance met the very stream which he had seen in the morning. There are many cattle-sheds on either side of the stream. Proceeding with the stream, which rises in the snowy mountain, he passed a monastery, but there was no house at hand, nothing but ruins.

Dok	17 miles.
?	18 "
The first gold mine of Lharingbu	12 "

50. At Ngen Lora there are about 30 houses. About midday he came to the second gold mine of Lharingbu where there is a ruined Dzong, but no ruler, or Jongpon. There are three gold diggers' houses with about 25 men in each. Here he crossed the stream, and was questioned as to destination; in reply he said that he was going on a pilgrimage to Lhāsa. This stream joins that which flows from the Putrang pass, at the Dzong, and then again joins the Tsang-po on the right hand side of Rongchakar Dzong. The road to Lhāsa and Men Chhuna join at Ngen Lora.

51. There are about 20 houses at Yarlung, the next place he reached, and the soil is rich and yields ample crops. From the Yadoda La (pass) a stream flows down in a northerly direction. This pass remains covered with snow all the year round. The roads from Lhāsa and Kongbo join at Tsetang. He crossed the Tsang-po "to the right" on the road to Samaye from Tsetang.

Yarlung	...	...	16 miles.
Tsetang	...	...	14 "
Samaye	...	...	17 "

52. At Lhāsa (which he reached by boat) he stayed three days at the Rāmoche monastery. The reason of his going back was want of news from India. A Kazi of Sikkim was at Lhāsa, so he went to his place and requested him to write a letter, through Nimsring,\* Interpreter at the Court of Darjeeling, to the Chief of the Survey of India; the contents of this letter were as follows:—"Sir,—The Lama who was sent with me sold me to a Jongpon as a slave and himself fled away with the Government things that were in his charge. On account of which the journey proved a bad one; however I, Kintup, have prepared the 500 logs according to the order of the late Captain Harman, and am prepared to throw 50 logs per day into the Tsang-po from Bipung in Pemakō, from the 5th to the 15th of the tenth Tibetan month of the year called *Chhuluk*, of the Tibetan calculation." This letter was sent to Darjeeling by the Kazi's wife (who was then going to Darjeeling) to the said interpreter, requesting him to inform the authorities of these facts.

53. Kintup returned from Lhāsa by a different route, following the road to China. He crossed the Kyi Chu to the south-east, and proceeded by the China road to the foot of the Kong-bu Ba pass, where he found four cattle-sheds and halted. He then ascended the pass and slept the night on flat ground. He reports the pass to be thinly covered with snow.

At the foot of the Kong-bu Ba Pass	16 miles. †
?	12 " †

54. A big stream issues from the Kong-bu Ba Pass and flows in a south-easterly direction through Kongbo Giamda; over it there is a bridge of stone and wood. In crossing this bridge every one has to pay six annas as poll tax. There are about 20 Nepālese shops and 15 shops of Tibetans at this place, which is the trijunction of the roads from Lhāsa, China and Kongbo. Kintup here left the China road which runs due north and travelled in a south-easterly direction with the stream, keeping it on his right-hand.

55. At Kongbo Naboib he found three Dzongs and many houses. The soil yields rich crops of wheat, barley, oats and peas, and supports many cattle. He found the road to Nyangtset very bad, and crossed the stream: 16 miles from Kongbo Naboib he passed 6 or 8 houses, still keeping the stream on his left, at a distance of about half a mile.

Kongbo Naboib	...	...	22 miles.
?	...	...	7 "
?	...	...	9 "

\* Evidently the same individual as Explorer Nem Singh.

† There is evidently something wrong in these distances, for in a bee-line Kongbo Giamda is 125 miles from Lhāsa, the place being taken to be identical with Giamda (in Kongbo) of P. Kishen Singh, with which it corresponds well in description.

56. At Nyangtset he found about 25 houses and a monastery. The soil yields rich crops and abundant wood; the stream still on his left and running south-east with him.

Nyangtset	...	...	16 miles.
Nyangtset	...	...	12 "

57. At Tashi Rabea he found about 40 houses on both sides of the stream, the soil being very rich. He slept in a jungle at the end of the next day's march and again on the following night. The next night he occupied a ruined house, which he describes as placed amidst other ruins.

Tashi Rabea	...	...	8 miles.
?	...	...	11 "
?	...	...	10 "
?	...	...	9 "

58. At Phuchushergi-Lhakang he discovered a lake on the north side of the stream. Here he left the stream on his left, and turned towards the Tsang-po.

Phuchushergi-Lhakang, 12 miles.

59. Crossing the Tsang-po he reached Chamna, and retraced his route to Pemakö, where the roads to Lhāsa and Gyāla Sindong (Gyāla and Sengdam) join. From this place he originally went to Lhāsa, and now on his return, he went back to the Lama who rescued him from the Jongpon, and again served under him for nearly 9 months. At the end of 9 months the Lama set him free and said, "I am glad to see you visiting the sacred places, so from to-day I have given you leave to go anywhere you like." Kintkhu bowed thrice before him, and bid him good-bye thankfully. He was, however, again engaged by a man for a month in stitching clothes, in return for which he got salt and food.

On the bank of the Tsang-po	...	...	6 miles.
Chamna	...	...	8 "

60. After a month he made his way to Bipung where he stayed ten days, and threw the 500 logs into the Tsang-po; then returning he stayed one month in order to earn money sufficient to buy food for his journey back to India.

Bipung	...	...	12 miles.
Dongsar	...	...	2 "

61. When he resumed his wanderings he went first to Pangodudung where there is a large village with 50 or 60 houses and a monastery attached to a *Dzong*. Here he reports that the water is at a great distance from the village.

Pangodudung, 3 miles.

62. On his onward way he crossed the Tsang-po on his left, *i.e.*, to the east, so that he placed the Tsang-po on his right-hand as it flowed southward. After crossing the Tsang-po he ascended a hill covered with jungle where he found about 11 houses. The Tsang-po is about one mile from Korba. The inhabitants of Korba resemble those of Pemakö.

Korba, 8 miles.

63. A stream issues from the east of Korba and flows towards the south-west joining the Tsang-po about two miles from Korba. He crossed the stream about one mile from Korba. After crossing he found himself on level ground till he reached the Tsang-po. Again he had to ascend to Ma-yum where there are four or five houses only and no cultivation.

Ma-yum, 7 miles.

64. About one mile from Ma-yum he crossed a stream which flowed from north-east to south-west, and joined the Tsang-po about 3 miles from the crossing place. The road is very steep here.

Satong, 7 miles.

65. A big stream issuing from the direction of Tsāri falls into the Tsang-po near this, and many *Lhobas* fish in it. Pursuing his route he found another stream issuing from Yangsong Neh over which there is a fine bridge and crossing it reached Angi (ng), where there are about 300 houses. The people of Angi (ng) are said to eat dogs, snakes, tigers, leopards, bears, monkeys, &c.

Angi (ng), 8 miles.

66. Shinging (Singging), which is the next place he reached, is a village of about 60 houses. From the top of the hill above Shinging (Singging) there is a short cut to Rikar (Puging). On his way from Angi (ng) he crossed a stream by stone bridge from his \*right-hand side. The stream flows towards the south. The people about here are almost naked, wearing nothing but a wrapper over the lower part of the body. They always carry a sword and bow, and even at night they keep their weapons near them. They are fond of hunting. The women and the old men cultivate the land. The soil yields rich crops of rice, maize and *kodo*†, a seed resembling that of mustard.

Shinging (Singging), 7 miles.

67. Hanging (Paling) contains about 20 houses. The village is on the Tsang-po and opposite it there are about 30 houses and large cultivated fields of rice and *kodo*. Hogs and cows abound.

Hanging (Paling), 3 miles.

\* Left-hand?.

† Probably the same as that known as Mandwa in Northern India.



68. At Shobang there are about 10 poor houses. Puding (Rikar) is a large place of about 100 houses and on the other side of the Tsang-po, opposite, there are about 50 more houses. The distance between the Tsang-po and Puding (Rikar) is about a mile. There are many pine trees (*longifolia*), apples and plantains. The men and women are separated, living in separate houses.

Shobang...	...	...	2 miles.
Puding (Rikar)	...	...	5 "

69. On his way from Puding (Rikar) Kintup ascended a hill covered with jungle, after crossing two or three streams. Arriving at Rikar (Puding) he found about 130 houses.

Rikar (Puding), 8 miles.

70. Next day he crossed by a bridge over a stream which flows from the north to south, and finally joins the Tsang-po. About this part there are many cotton fields, from the yield of which the inhabitants prepare cloth which they sell in the market of Pemakö. The roads being very bad, these people never use horses. The Tsang-po flows about 2 miles from the village of Ketu (Gette) where Kintup halted, and where there are about 20 houses.

Ketu (Gette), 7 miles.

71. Shimong (Simong), his next halting place, is situated about a mile from the Tsang-po; on the east of it there are about 100 houses belonging to a village called Mongri; on the south about 30 houses, and in Shimong (Simong) itself there are about 140 houses. These three villages are side by side. Here Kintup was arrested by the headman of the village. But he got free by paying 306 anna coins. For a night's shelter he had to pay a handful of salt to every man and woman that were in the house.

Shimong (Simong), 10 miles.

72. After ascending a hill on his left, he reached Mabuk or Gobuk where there are 60 houses, with many mango, plantain and *marshat* trees. A stream flows from the left of the village, and the soil produces rich crops. Many cotton sellers gather here. He stayed five days at Mabuk or Gobuk from which place the Tsang-po is not visible. 3 miles from Mabuk or Gobuk he crossed the stream on the right-hand side, after which he had to ascend and descend, till he reached Tarpin (Dalbuing). Here are about 80 houses. The Tsang-po is about 3 miles from the village. Pursuing his journey over level ground he crossed a stream flowing from his left, and at Olon or Onlow found about 90 houses. Many wild animals abound here, such as tigers, leopards, bears, &c. There is a high snowy mountain on the north of the village whence a stream flows towards the south and joins the Tsang-po at Damro or Padam.

Mabuk or Gobuk	...	...	9 miles.
Tarpin (Dalbuing)	...	...	8 "
Olon or Onlow	...	...	6 "

73. At Damro or Padam there are about 100 houses, the Tsang-po being about 4 miles from the village. Here there is a well known market place where traders from Yaser, Tsüri, and India bring their merchandize for sale. The river issuing from Sanga Chu Dzong\* joins the Tsang-po about 3 miles from Damro or Padam. He could proceed no further than Olon or Onlow, and was obliged to retrace his steps to Pemakö where he stayed 2 months in search of provisions before returning to Darjeeling through Lhüsa. Kintup reached his own country (Tasheding) after 3 months. On his arrival home he found that his mother had died during his wanderings, so he stayed for 2½ months whilst performing her funeral rites. He started from his home again on the morning of the 19th October, 1884, and met Nem Singh, Interpreter, and Mr. A. W. Paul at the monastery of Namchi. Nem Singh ordered him to go back with him to the Lachen and Lachung valleys, so in obedience to orders he accompanied them to those places, and finally reached Darjeeling after 28 days, i. e., he arrived there on the 17th November, 1884. The distance from Damro or Padam to the British Government boundary is about 35 miles only, so far as Kintup could ascertain.

Damro or Padam, 8 miles.

\* The Yangsong Chu, or Nagong Chu of P. Kishen Singh.

*The Narrative Account of Lama Ugyen Gyatso's third Season's Explorations in Tibet in 1883. Compiled by Lt.-Col. Holdich, R.E.*

[Explorations in Tibet by Lama Ugyen Gyatso in 1883. This journey, which is the third of those undertaken by the Lama, was reviewed at some length by Colonel Tanner in the Annual Report of the Survey of India for 1883-84. Of the work of the two previous seasons no descriptive accounts are forthcoming; but it is chiefly from the information furnished by him that Colonel Tanner was able to compile the south-western section of sheet No. 6 of the N.E. Trans-Frontier Series, which accompanies this report. The present account has been entirely written by Lieut.-Colonel Holdich, R.E., from the original M.S. in English by the Lama who is in the employ of the Bengal Educational Department. The narrative covers a period of only 6½ months during which short time the Lama traversed from Darjeeling, *viâ* the Dongkhya Pass, Kam-pa Dzong (Fort) and Gyāngtse Dzong to Shigātse on the Tsang-po; thence eastwards to the Yam-drok Tso or Palti lake, the curious double peninsula of which he has completely mapped, and southwards *viâ* the Pho Mo Chang Thang Tso (lake) to Lhobrak, mapping for the first time the upper course of the river so named, and identifying it with the Manas of Assam; thence north-eastwards *viâ* the Trigu Tso (lake) to Tsetang over country till then absolutely unknown to us; next to Lhāsa following the northern bank of the Tsang-po for about 60 miles, and finally back to Darjeeling, after skirting and mapping the outer edge of the Yam-drok Tso or Palti lake, *viâ* the Bam or Rham Tso (lake) and the Tang pass and the Chum-bi valley. The valuable geographical information which he has thus collected is interspersed with references to the social and religious customs, &c., of the Tibetans, which will doubtless prove very acceptable to the general reader. There is also much legendary lore in his original account, which has been necessarily left out of this report, but might be of value to Tibetan scholars when collated with other similar information.]

1. The Lama, known to the Survey of India Department as Ugyen Gyatso, received instructions to start for Tibet on special duty from the Director of Public Instruction, Bengal, on the 1st June, 1883. He was sent to join Colonel Tanner's party before starting in order that he might learn the use of a few simple surveying instruments. Colonel Tanner was satisfied with his capabilities, and after a week's training which was sufficient to teach him to read a prismatic compass and to find his altitude by the hypsometer, he started him with general instructions to commence work from the Dongkhya pass. He had been previously supplied with the means of collecting specimens for the Calcutta Botanical Society and fully instructed by Mr. Macaulay, the Secretary to the Bengal Government, as to the information which it was desirable to collect. He made his own arrangements for the purchase of cloth, needles, tobacco, &c., to be carried as merchandise, and took care to be well provided with medicines and funds for his journey.

2. Before leaving Darjeeling on the 9th June, 1883, he informed certain inquisitive neighbours that he was going to visit his own place at Yangong. A few of his Bhotia friends accompanied him as far as Lebong and then returned, whilst he pursued his way to the Ging manastery. Here he found some Buddhist artists decorating the walls of the monastery with pictures and 'images' and was requested to make a present to the monastery, not merely as an act of charity, but to secure for himself success and safety during his wanderings. He presented the head Lama with 30 rupees, and further gave one rupee to each of the artists who were decorating the walls.

3. On the 10th, he left Padamtain (Badamtam?) early and crossed the Rangit river by boat. There is a cane bridge over the river but it was closed. The heat in the low valley at this time of the year was excessive, and the Lama was glad to take refuge from it in the *marwa* shop of a Bhotia at Kietam, and resumed his march in the cool of the day. That night he halted at Namchi, on the 11th at Temi, and on the 12th reached Yangong monastery in his own part of the country. Here he engaged fresh coolies for carriage, and laid in a stock of provisions. He stayed nine days at this, his old home—where his uncle had been chief Lama in his time. The 15th was an Tibetan holiday in honor of Buddha Menlha, the medicine deity of Tibet. So the Lama gave a feast to the monks, and collected the whole country side to keep the festival. "All the villagers between the Rungpo and Rungum attended that day" and were feasted royally. The religious ceremony called *Kangsha* was performed, lights were offered to the deities, and the ceremonial of worshipping the snowy range Kangchen Dzwenga (Kinchinjunga), with an accompaniment of drums and musical instruments, was duly observed. Then the Lama got up and spoke to the people advising them to live soberly and in friendship with each other, to obey the elders, to cultivate good manners and true politeness, to keep the peace, obey the king's officers, and to serve the priests willingly and promptly; and the people on their part offered *Khodar* to

the Lama and replied that since darkness had settled over them by the death of his uncle, so light had again been brought by his presence amongst them. They prayed that he might live as chief amongst them. This was hardly compatible with the Lama's instructions, so he graciously appointed a *locum tenens* whom he advised them to obey and consult in every difficulty.

4. After sending presents ahead to the Lamas of Pemionchi and ascertaining that the road was clear the Lama repacked his baggage and started again on the 22nd. Leaving Yangong early, the party crossed the Kungum river by a temporary bridge of bamboos which they constructed themselves in about three hours, and reached Lingmo at evening.

5. Next day they halted at the Rongphop stream in heavy rain, and passed the night of the 24th in a cave near the Lingtiang village.

6. Crossing the Seuntam (Singtam) pass on the 25th they halted at Lingtam Gorh, heavy rain still continuing to impede their progress. They had to bridge the Mun Chu river, next day, before crossing, and took refuge in a cave called Ralaltakphuk.

7. On the 29th, they crossed the Tista river in full flood, after employing two days in making the bridge practicable, and made their way to Ringim monastery, where the Lama records that he bought a pig, half of which he gave to the *Lepcha* coolies, and the other half he dried and carried with him as a present for the people of Lachung.

8. They left Ringim monastery on the 2nd July, and reached Myang that day, and Chakung the next, making their way by a road which had become overgrown with jungle and was infested with leeches and snakes. They found the direct road between Chakung and Tong blocked by landslips, so they crossed the Tista by a cane bridge, then surmounted the Shingpe La and descended to Pagong and Rangbeng. Here they recrossed the Tista and reached the Cheungtung monastery at nightfall. Here the Lama did not fail to request the orthodox religious assistance of the monastery, and various ceremonies or forms of Buddhist worship were observed on his behalf.

9. On the 6th July he arrived at Lachung. Here he stayed with some relations and had to negotiate for permission to pass into Tibetan territory. He first bought over the people of Lachung by judicious presents and induced them to use their interest with a Tibetan official who was present at Yeumtang, supervising the cutting and carriage of wood into Tibet, to allow him to proceed. These negotiations delayed him considerably, but by dint of liberal presents to the Tibetan representative, and by assuming the role of a pilgrim (in which he maintains that the fact of his having his wife with him considerably helped him) he succeeded at last in obtaining permission to cross the pass, and forthwith engaged the necessary yaks and ponies for transport.

10. On the 18th, they started from Yeumtang in company with the Tibetan official and reached Mome Samdong; and on the 19th they crossed the Dongkhya pass, 18,100 feet high. The Lama's description of his experiences in crossing the pass is amusing. He attributes the giddiness and sickness (to which Tibetans are as liable as Europeans), caused by the rarified atmosphere, to the smell of certain yellow flowers which he plucked by the way. From the summit of the pass he commenced his survey observations. Here is the source of the Tista river. After a sharp descent of more than a mile they reached a place called Tso-kyungtung, a 'sloping plain,' where travellers usually rest. Passing a cave, called Täg-mar-khob, they proceeded by the main road, which gradually improved as they descended, till they crossed a stream where they halted the night. A few herdsmen living in yak skin tents were all the inhabitants they met with.

11. On the 20th the Sikkim people were prostrate from the effects of crossing the pass, so the Lama employed himself in collecting botanical specimens. The stream they halted near is a feeder of the Tsolamo (Cholamo) which it joins near its outlet. Next day they crossed an elevated, gravelly, plateau and reached the fort of Gonpu Tha-tshang, where they pitched their tent after a 15-mile march.

12. On the 22nd, the Lama visited the Sonpu—or nunnery—where he found 15 women. These nuns were the owners of large flocks of sheep and goats which were penned in folds built on to their own dwelling places. The Lama complains that the nuns were "very dirty" "their faces were very black." Past the nunnery runs a stream which is the head of the Arun river in Walung, and the road, which follows up a stream and over the Kye lia La, leads to Kam-pa Dzong (Fort).

13. Following the Arun stream they marched 16½ miles on the 23rd, to the village of Lung-dung, over a road which was partly stony, and partly ran through a grassy plain passing the nunnery of Dsa lung Nya-gon. Carpets were offered for sale at this place, which is a small village of about 15 houses.

14. A short march next day brought the party to the hot springs of Kotsi (Ko-so) where they rested for the very necessary operation of a bath. There are two large *kunds*, or wells, and several small ones—one of which is so hot that the Lama maintains that beef is boiled in it readily. The ground all round it is too hot to tread on with a naked foot, and the water boils with a "harsh noise."

15. Next day the Lama went exploring to the Kotsi (Ko-so) village, which is apparently the head-quarters of the local carpet industry, and a mile further to the villages of Tār-gya and Lāh-ye where he found a small amount of inferior barley cultivation. Kinchinjunga, the big snowy peak of Sikkim, bears 205° from Lāh-ye.

16. On the 26th, the Lama and his brother-in-law crossed the Ketsu pass (14,500 feet) from which the large villages of Kur and Gyathong were visible to the N.E., and descended to Kam-pa Dzong (Fort). Here they made the usual presents to the Jongpon (Dzongpon)—without which no Tibetan traveller seems to get very far—and went to visit the Dzong. The usual consultation and questioning then followed before the Jongpon would give permission to the Lama to proceed. The presence of his wife in his camp seemed to have a re-assuring effect—it was a sort of guarantee that he was a *bonâ fide* pilgrim. He got his permission at last and made further arrangements by sending back his yaks and hiring ponies. According to the Lama a pony will cover twice the distance in a day that a yak will.

17. On the 27th, a 22-mile march brought the party to Gonpu Tha-tshang (Ta-teang).

18. On the 28th, keeping along a level road for 11 miles they crossed the head of the Arun, and passed several *dōks* or herdsmen's camps. After this the road ascends to the La-ngoi pass, the height of which is 16,000 feet. This pass is difficult on the north side but easy on the south. About 2½ miles down from the pass they reached the La-ngoi *dōk*, where they halted after a 23-mile march.

19. The next day's march involved the crossing of three easy passes, the La-mo La, Keser La, and Selūng La. Between these passes were open level plains with a certain amount of marsh land and many *dōks* belonging to Tong sher Dzong which is visible from Selūng La. The Dzong belongs to a Tibetan lady who has appointed a manager. The day's march was continued through open gravelly plains, and the party encountered several *dōks*, with a few stone-built houses here and there, and parties of traders mounted on ponies, with their goods carried on asses and yaks, proceeding to the market place of Lar. They pitched their tents alongside of a *dōk* and halted after 20 miles of marching.

20. On the 30th the Lama La, a precipitous and rocky mountain pass 16,800 feet high, was crossed; at the foot of it on the far side they visited the She-kar monastery, and ten miles further arrived at Kyil Khor Ta Dub (Kingatakdup) where there is a rock-cut cave or hermitage of considerable celebrity. The Lama describes it much as follows:—"We took lighted lamps and after going 120 paces inside the cavern, we reached an open flat space about 20 feet square, from which a rock-cut ladder led us up to another open space about 10 feet square; 30 paces further brought us to a stone seat, said to be the seat of Guru Pemajungnet. Behind the seat was a small hole drilled through the rock; through this hole a wooden spoon about two feet long was passed by the sister of the Lama who accompanied us, and a small amount of reddish dust was extracted which is said to be the refuse of the Guru's food. This we ate and found very sweet to the taste. Then after lighting some sacred lamps and asking a blessing, we descended by another flight of steps to a place where a stream issues from the face of the rock. The total length of the cave from the entrance to the stream is about ¼ mile. There are ascents and descents, and many turns and twists through narrow passages where only one man can go at a time, and many people are afraid to risk exploring the place. If the lamp were to go out there would be no finding the way back again." Near the entrance to the cave is a small monastery, the Lama of which entertained Lama Ugyen Gyatso, and told him many local traditions which are hardly worth recording.

21. From the She-kar monastery Lama Ugyen Gyatso travelled over open gravel-covered plains with occasional fields of barley cultivation, past the village of Kab-shi, near to which he crossed the head of the Khe Chu river, to Pongong *dōk* at the western foot of the Pongong La.

22. On the 31st July, he crossed the pass after a steep ascent, and reached the banks of the Nyang river or Pen-nang-chu the same evening. The pass, which is 16,200 feet high, he describes as very difficult. From it he looked down on the great valley of the Nyang river and could see the town of Gyüntse across the intervening gravel-covered plains, surrounded with gardens and orchards on the eastern banks of the river. He could not at once visit the town owing to the presence there of some Sikkim people who might have recognised him, but on the 3rd he crossed the river by a stone-built bridge 300 paces long, and made his way through half

a mile of gardens to the monastery. Here he found friends, and obtained permission to visit the great temple of Gyäntse which overlooks the town and market place. This temple is said to be 445 years old and to have been built by the King of Tsang. It is nine storeys high, and from Lama Ugyen Gyatso's description is octagonal in shape. On each storey in succession as he ascended he found eight chapels, or sacred places, corresponding to each side of the building. At the top there were images and 'cylindrical' figures. The roof of it is covered with plates of mixed copper and gold, and from it are suspended bells attached to chains. From here he could overlook the market place with its busy crowds of buyers and sellers, all far too intent on their own business to notice casual visitors on the roof of the temple. He passed a day as the guest of a lay friend of his in the town, whom he frankly describes as a better educated and much more liberal-minded man than the priests, but he does not omit to note that he paid well for his lodgings. The monastery of Gyäntse must be extensive, as it affords accommodation for 600 monks. Meanwhile he was occupied in surveying round the town. There are two bridges over the river, which in summer time is navigated by skin boats. Notwithstanding the size and general importance of this place—one of the chief towns of Tibet—the Lama was unable to exchange the ponies he had brought with him from Kam-pa Dzong (Fort) for fresh animals, and had to take his old ones on with him.

23. On the 4th August, he left Gyäntse and still travelling over gravel plains, he followed the course of the Nyang river towards Shigätse. His road lay through a succession of villages surrounded with barley fields; to the right and left of him were stupendous mountain chains, such as even called forth some expression of admiration from this unimpressible Tibetan, and the blue waters of the Nyang flowed gently near his path. At the monastery of Dong-tse he found gardens and another pagoda-like temple with a shining roof of gold and 'cylindrical' figures at the top. At Pehsi he refers briefly to a 'two-legged' temple, but exactly what form of architecture is represented by this description it is hard to say. Continuous villages, gardens, and barley fields formed the chief features of his route, till he reached Norpu Kyang dsin, where he at last obtained fresh ponies. When he struck the river bank again opposite Pen-nang Dzong, he describes 'willow' gardens and thick woods in the neighbourhood of the river, but does not tell us what was the character of the trees. The monastery of Shalu, which stands some few miles to the south of the river, is famous for being the head-quarters of instruction in the art of magic. Here there is, according to Lama Ugyen Gyatso, an underground cave into which one man at a time is introduced for the term of 12 years, during which he is supposed to acquire a knowledge of certain hidden mysteries by processes which our Lama has left unexplained. For 12 years he is shut out of communication with the upper world, and at the end of it he signifies his determination to return to civilization by blowing on a horn made from a man's thigh bone. At the first blast of this remarkable instrument all his belongings, such as they are, are blown to the surface through a small hole in the ground. At the second blast he emerges himself by another hole equally small, in the familiar attitude of Budh, with his legs crossed and his hands folded. Then he is tried with certain tests—such as sitting on a heap of barley without displacing a grain, &c.—to see if he has successfully acquired the magic arts. If he passes the tests he becomes a Guru Lama; if not, he simply goes free. Such grotesque superstitions point to a more degraded condition of the national religion of Tibet in the heart of the country than the admirers of the 'Light of Asia' would care to credit. As the Lama approached Shigätse, villages and cultivation became more frequent, and he describes the country he passed through as consisting of plains and widely extended fields well watered by the Nyang river. Frequent streams, flowing into the river, were crossed, till he came to one which presented some difficulty owing to the flood caused by the heavy rain which had been prevalent latterly. He succeeded however in crossing without mishap, though a traveller on foot following him was carried away and only rescued by swimmers. A few miles further they came to the outer walls of Tra-shi-lhun-po, which has been better described by previous travellers than it is by the Lama. Tra-shi-lhun-po appears to be an enclosed position forming a sort of outwork to the city of Shigätse.

24. From the 7th to 13th August, he remained at Shigätse, visiting the sacred places of that city and of Tra-shi-lhun-po, and performing religious ceremonies. Amongst others he visited "Singchentulku in the upper storey of 'Thoisamling" and there he took 'sacrament';—or an oath to repeat certain forms of prayer to the god Idam 3,000 times a day. He speedily found his performance quite incompatible with his secular duties, so he revisited the high priest and begged to be released from his oath. He was duly absolved, and let off with 1,000 incantations, and "as many more as he could manage." At Shigätse he mentions having purchased three good asses at the value of 20 rupees each, but gives no detailed account of the city itself, beyond referring to one large temple to the north of it, the girth of which is 132 paces, and to the temple or fort of Tra-shi-lhun-po, wherein he describes a wall 125 feet long and equally high, on which were hung pictures of Buddha in holiday time. This custom is referred to on more than one occasion in his narrative. The height of Shigätse he fixed at 12,350 feet above sea-level by hypsometer. Pandit Nain Singh, who was one of the first explorers to

reach Shigätse, writes of Tra-shi-lhun-po as a very well-built monastery surrounded by a wall enclosing numerous houses and temples, about a mile in circumference. There are upwards of 3,000 priests in the monastery, and here resides one of the two Great Lamas of Tibet who are considered as incarnations of the deity, and are supposed never to die. In Pandit Nain Singh's time this was a boy eleven years old. The daily market or *bāzār* of Shigätse is a great feature of the place, occupying all the space (according to Nain Singh) between Shigätse and Tra-shi-lhun-po. Nain Singh also refers to a fort on a low hill standing to the N.W. of the city which the Lama does not mention.

25. On the 14th August, the Lama continued his explorations eastwards from Shigätse. He first followed the course of the Tsang-po along its southern bank, passing through a well-cultivated and well-populated country bordering the river. He mentions a visit to the Kun Kyabling palace at a distance of  $\frac{3}{4}$  mile from Shigätse. Here he saw a beautiful picture of a state progress of the Grand Lama. Then crossing the Nyang river by the *Shampa Shar* stone bridge, which is 400 paces long, he came to the Muhammadan mosque called Kha chhi Lhakang on the banks of the river. Thence his road for 2 or 3 days' march lay parallel to the Tsang-po, never far from it, and occasionally approaching closely to its rocky bank. All this part of his journey was familiar to him, and has been trodden by previous explorers. He was entertained by old friends at the principal villages, and it is surprising how many of these friends were of the gentle and more hospitable sex. South of him, to his right hand, lay a mountain range from which lateral valleys sloped downwards to the Tsang-po. Some of these valleys are of great fertility and beauty, the valley of Lhan in particular, which belongs to the Phendikangsen of Tra-shi-lhun-po, he states to be the most productive in the whole province of Tsang. At Tag-tu-kha, 50 miles from Shigätse, there is a ferry which marks the point to which the river is navigable from Shigätse. Below this point where the Tsang-po takes a bend southwards the river is 'rough and rapid' and is quite impracticable to the hide-built boats of the country. A few miles beyond Tag-tu-kha the Lama found the road difficult and narrow, there being apparently a narrow passage across a rocky spur which reaches down to the river from the southern watershed. He passed, about 2 miles east of the village of Khagtong, a large rock with the image of Buddha painted on it. He left the neighbourhood of the Tsang-po at its junction with the Rang river, and followed the latter river up to the great lake Yam-drok Tso, or Palti lake, visiting the famous monastery of Rang chu chen. Here he was obliged to give up taking hypsometrical observations on account of the inquisitiveness of the people about him. In the *Gonkhang* (one of the principal temples) he found many images, and one in particular of Maitreya Buddha made of *scrsang* or gilded copper of gigantic size. It was three storeys (about 30 feet) high. The lower part of its body was accommodated on the ground floor, and its head protruded above the second floor. "Of all the Buddhist images of Tibet" says the Lama Ugyen Gyatso, "this was the largest, brightest, and most remarkable." A glittering gilt dome surmounts the shrine.

26. On the 20th August, he crossed the river with difficulty. Rains were continuous at this time, and the river was a black, turbid flood. He and his wife were constantly soaked with rain, and occasionally found it difficult to obtain shelter at the end of a day's march.

27. On the 22nd, they left the marshy swamp of Tsa-thang, where they had found hospitable shelter under the roof of a *Dokpa* lady, and reached the Yamdok Samding monastery on the 23rd, after passing a day at Nang-kar-tse Dzong.

28. The rest of the month was occupied in exploring the very remarkable system of lakes called Yam-drok Tso. The weather was unpropitious for a clear view, rain was frequent, and thick mists enveloped the mountain sides and spread over the surface of the water. From the western side of this vast lake a mountainous peninsula projects north-eastward into it, connected with the mainland by two arms which themselves enclose a second and smaller lake called the Du-mo lake. One of these arms is formed by a precipitous mountain ridge called Tag La, the broken sides of which slope down so sharply on either side to the water's edge that they bar all access from the mainland to the peninsula. The other arm forms an accessible link between the two, leading off from the grass plains about Nang-kar-tse Dzong and Samding, to the towering mountains which form the great central feature of this projecting mass. There is a margin, however, between their grass covered slopes and the lake, dotted with the villages of a fishing population, fringing the purple sides of the hills with green and dividing them from the deep blue waters of the Yam-drok Tso. Hidden in the recesses of the mountains is the secret hermitage of Padma Sambhava, called *Sangwai-na* of To nang, with the "villages of Dutong and the hill of Duila". The Lama made his way right round the To nang peninsula in spite of never ceasing rain, and many difficulties and rough experiences. He was always entertained with hospitality after a first fierce reception by huge Tibetan dogs, and much questioning as to his business. Footsore and thoroughly weary the Lama reached Samding again on the 29th August, after losing his way and severely bruising himself among the rock which overhung Du-mo lake.

Du-mo lake impressed him greatly; its deep, still waters embosomed amongst mighty cliffs—the silence which hung over the stupendous crags which encircled it, broken only by the hoarse roar of falling masses which ever and anon thundered down the mountain sides into its depths, associated in his mind with traditions of demons and genii who inhabited the lake and whose good-will was daily propitiated by the people living around—struck his superstitious mind with unwonted awe. And he declares that he experienced sensations whilst wandering round Du-mo lake that had hitherto been entirely strange to him. The level of Du-mo lake (14,300 feet) is 500 feet higher than that of Yam-drok Tso, and it is said to be gradually rising. Considering that there is no outlet, and that the frequent landslips to which the Lama refers must certainly tend to raise the water level, this is not surprising; but the superstitious inhabitants of this wild region believe that it is destined to overflow eventually, and to destroy all human life; hence their dread of the lake and their unceasing endeavours to keep on good terms with the evil genius presiding over it. Later on in the course of his travels the Lama worked his way round the larger lake of Yam-drok Tso, and has given us a very complete outline of its scorpion like form: but for the present he turned his face southward with a view of exploring the Lhobrak valley and unknown lakes in that direction.

29. He left Samding on the 1st September and on the 2nd he sighted the lake Pho Mo Chang Thang from the pass of Yeh Pass which immediately overlooks it. Pho Mo seems to present a strong contrast to the gloomy grandeur of Yam-drok and Du-mo lakes. To the south-east the Lama describes the snowy peaks of Kulha Kangri and Man-da as piercing “the vault of heaven like the dazzling spires of crystal *churtans* (a “*churtan*” being a solid, masonry built building of pagoda like form, frequently embellished by a gilt ball and crescent at the top, enclosing certain religious books and stone engraved prayers which are placed in a recess of the interior) whilst the lake was surrounded by an array of most magnificent peaks the like of which my eyes never beheld.” “There is a belt of gentle slopes round the lake dotted over with *Dokpa* tents. A spacious plateau extends to the north-east of it, along which the passage to Man-da pass lay.” The name Pho Mo (*i.e.*, male and female) is derived from two islands, the highest of which reaches to about 500 feet above the lake level (16,500 feet) which lie close together near its north-western shores. The people hereabouts are called *Hor dokpa* and *Sog dokpa*, descendants of the great nomad races of Mongolia, but now comparatively civilized and settled.

30. On the 3rd he crossed the Man-da pass (17,450 feet), the boundary between the province of U and the Lhobrak country by a pass which he describes as being so steep as to cause “great pain in the knee joints”, and descended to the village of Man-da in Lhobrak (13,800 feet). From Man-da he followed the course of the Lhobrak through a valley filled with villages and cultivation. He visited the celebrated shrine of Seh Guru (‘hhoi Wang, built after the model of the famous monastery of Nalendra in Magadha. The shrine is surrounded by groves of poplars and contains some important relics, amongst others a stuffed horse of great sanctity (belonging to the great *Guru*) which is called *Jamlingninkhore* or “the horse that can go round the world in one day.” Observing that the horse was bereft of his ‘left leg’, the Lama enquired the cause, and was told how the leg had been stolen by a *Khampa* pilgrim with a view of ‘enchanting’ the ponies of Khām. The thief became insane, and his friends took him to the high priest of the sanctuary for advice, who instantly divined that he had stolen some sacred thing. This so frightened the thief that the leg was secretly restored, and the thief and his friends vanished from the place and never were seen again. The upper Lhobrak is well cultivated; barley, pea, mustard, wheat, and rape crops were noticed by the Lama surrounding the monastery of Lha-lung. With some difficulty he obtained permission to see the sacred objects of the monastery, whose saintly founder, Lha-lung, has three incarnations in Tibet. One of them is the present abbot of the monastery, who was born in Bhutān, and is a nephew of the Paro Penlo. The monastery is well endowed by the Tibetan Government, and rituals are encouraged in it for the suppression of evil spirits and demons.

31. On the 5th September, the Lama left the monastery and followed the Lhobrak valley route to its junction with the Tum pass road into Bhutān. Here he struck southward, and ascended the Tum pass (16,850 feet) till he reached the grassy plateau which embosoms the sacred lake of Tong-tsho Pama-ling. The pass was difficult and the ascent was rough and trying, passing along snow-covered slopes flanked by deep gorges, but after a descent on the southern side of Tum pass of about 2,000 feet, he reached a “beautiful flat country which gently sloped up to the foot of mountains carpeted with exquisite verdure and lovely flowers, and bushes of different shrubs.” At the head of the lake is the monastery of Tong-tsho Pama-ling, looking from which to the south-east the view embraced the “crystal surface of the thrice holy lake flanked by a range of billowy mountains, overtopped in the distance by the lofty snows of Kulha Kangri. To the south of the lake there is a lofty mountain called Gonpo Chhyagtso. The Kulha Kangri, with their snow-clad peaks standing in most picturesque array, resemble (to compare great things with small) the Buddhist prayer offerings called *Torma*. To the north of



Kulha Kangri is the dome-like peak called Kulhai Cham—that is his wife—on her sides stand exalted the sublime peaks of Chenrezi, Chhiyagshi, Lonchhen Lhathoi Kar (the hoary-headed minister), as also Gartoi, Namgyal and others. In her front is the pinnacle of Dsambalairi." After visiting a celebrated cave, consecrated to Guru Pema and surrounded on three sides by glaciers, to the N.W. of the lake, the Lama started on the 7th south-eastwards over this elevated plateau (nearly 15,000 feet above sea) to find his way back again into the Lhobrak valley.

32. He followed the course of the river which drains from the lake into the Lhobrak for a day's march, travelling over plains which were overgrown with a prickly shrub bearing red berries, and passing several villages on the banks of the stream. He speaks of "spacious flats" and beautiful parterres adjoining the Seh-chu river of which the Pama-ling outlet is a feeder. Stone bridges are frequently mentioned in this locality, and he crossed the Seh-chu by one in order to reach the celebrated monastery Seh-sang-khar-gu-thog. Here he was hospitably received by an old man who communicated much local history to him.

33. Leaving the Seh-chu on the 9th, he struck eastwards, still travelling approximately parallel to the Lhobrak, over the high passes which surmount the long spurs of the southern watershed which is the boundary between Tibet and Bhutān. This is apparently the main route southwards, the actual valley of the Lhobrak being presumably impassable.

34. Crossing the Roi-pa pass (steep on the north and fairly easy to the south), 15,800 feet, and the Kha-na pass, through heavy mists and fog, he descended into the lateral valley of the Mug. Here he describes a well-peopled and highly cultivated valley, the country generally possessing much the aspect of Sikkim, and being reputed the most populated and fertile district in Tibet. Cultivation is carried along the hill slopes on terraces as in Sikkim, only instead of rice, barley and pea, are chiefly grown. Monasteries were as frequent here as elsewhere. It was harvest time when the Lama passed through this valley, and the air was full of the songs of the reapers.

35. Crossing southwards out of the valley over an easy pass, he came to Lung-hah where the mountain slopes are covered with Alpine (?) pines. A few miles south of Lung-hah he reached Thing, a little north of the junction of the Lhobrak with a large affluent, the Tamshul, from the N.E. Here he obtained the following information relative to the great trade route southwards to Bhutān *viâ* Nāling:—

After following the course of the Lhobrak by an extremely narrow passage over rocks, the monastery of Sengeri is first reached. The next stage takes the traveller to Nāling, where there is a custom-house with a frontier outpost. The population of Nāling is *Lebok*, which appears to be a name for Tibetan settlers in Bhutān. It is a Tibetan settlement within the jurisdiction of the Bhutān Government.

Proceeding further, the villages of Kurti, Tincho Pet, Chākosum and others are passed till Chatsi Petla is reached. Here the road crosses the river to the right bank, and then runs through Shamling, Shuchung, &c. to Leling Dzong and finally to Dungsāng Kha and Kusa Nagari. This is an important trade route.

From the foot of the Kongpa south of the Tong-tsho Pama-ling lake the Lama had been travelling over the same route as the explorer Rinzin Nimgyal who entered Tibet over the Rongpa La from Bhutān. This route passes from Tibet over the Rongpa and Monlākāchung passes to Tongsa (5 day's journey) which is probably (according to Colonel Tanner) the Tongsu of Pemberton. The Monlākāchung pass forms the boundary between Tibet and Bhutān. The Lama crossed the Lhobrak by a great stone bridge a mile or so above its junction with the Tamshul Tsang-po from the north-east. The bridge is 40 feet high and 100 feet long, strong and substantial. Passing over the intervening spur he reached the Tamshul and crossed it by another stone bridge which had a guard-house at its eastern extremity. A large bell was suspended to the top of the narrow gateway of this house which was struck when the door opened, and on either side a fierce Tibetan mastiff was chained to guard the passage. The use of these magnificent Tibetan dogs as guards is often referred to by the Lama. They are fully as large as the English mastiff, but rough-coated, shaggy, and untameably fierce.

36. After surmounting a steep incline on the left bank of the river, the Lama reached the town of Lhakhang Dzong. Here, when he had arranged for lodgings, he visited the monasteries of Kharchu and Gonpatuto situated on a rocky eminence to the south of Lhakhang, and he graphically describes the rugged grandeur of the surrounding scenery. The Kharchu monastery is said to be one of the richest in Tibet, and to contain many bronzes taken from Magadha in the middle ages. On his return to Lhakhang Dzong he found two "bailiffs" in the house of his host, sent there by the *Dzong* to examine his packages: some of his instruments and treasures had been concealed by his wife, but a very partial examination of his effects was quite enough to arouse all the suspicions of the *Dzong*. He was at once accused of being a spy of the *Phittings*.



37. This was a serious difficulty; the Lama was arrested and kept in confinement with his brother-in-law and his wife, and taken finally before the two Jongpons (Dzongpons) (the lay and clerical chiefs of the place) who consulted as to the best way of dealing with him. All his instruments and botanical specimens, books, maps, &c, were examined, and there was clearly no doubt in the minds of the Jongpons (Dzongpons) as to his object in visiting the country after the examination was over. They decided to send everything belonging to him to Lhāsa, and to keep him in security till an answer was received from the Tibet Government as to the nature of his punishment. Very strict orders had recently been issued by the Tibet Government against allowing explorers to make maps of the country, and these orders were read and explained to the Lama. His detention at Lhakhang promised to be indefinitely prolonged, but he found friends in the man with whom he was lodging, and the junior officials about the Jongpons (Dzongpons). A few judicious bribes induced them to intercede for him, and his own tact and skill in meeting the difficult cross-questioning to which he was subjected finally helped him out of the difficulty. On the whole the Tibetan officials seem to have behaved with most remarkable moderation. They knew perfectly well that he was an explorer, yet they returned him all his property uninjured, except his fair note-book, which was destroyed, and let him go with nothing further than a promise that he would not visit Lhāsa, and that he would carefully conceal all the circumstances of his arrest and release. They even gave him a free pass as far as their jurisdiction extended.

38. On the 15th September, at 5 in the morning, the Lama left Lhakhang to explore the valley of the Tamshul Tsang-po upwards. Following the high road on the left bank of the river he crossed a succession of spurs trending down from the mountain range which flanked the valley on the south-east, the passes over which, though sometimes difficult, were invariably practicable for laden ponies, yaks, and donkeys. Between these spurs were narrow, and for the most part uncultivated, lateral valleys, some of which (like the Penpa Chu) afforded means of access to the crest of the mountain chain and led to passes over it. Villages were fairly frequent on the bank of the river where the side water-courses debouched into the main valley, and as the valley opened towards the upper reaches of the river there was a good deal of cultivation on both banks.

39. After leaving Lhakhang Dzong he first encountered the Lang pass over a comparatively low watershed, from which he obtained a magnificent view of the country about Lhakhang Dzong and of the towering cliffs on which the Kharchu monastery was built. On reaching the Penpa Chu he found a road leading up the valley to the mountains on the south-east, and obtained much information respecting the Panpachhakdor monastery near its head. It is said to contain an image of Chhakdor (an Indian deity) made of the precious metals, and an unusually large image of Guru Rhinpoche which were originally presented by the king of Ladākh. There are many traditions about these images, all of which are faithfully related by the Lama in his diary, but are hardly worth transcribing. He refers frequently to *Zahor* fashion of making images which appears mainly to consist in the placing of valuables, such as gold and jewels, inside them.

40. He next crossed the Dsā-kar pass (14,500 feet) over another spur of the range on his right which abutted on the river. This formed the boundary of the Lhakhang district, and at Dā-ma Dzong near its foot, he encountered a boundary post or customs-house, where his baggage was again examined. He got off however without much cross-questioning, and passed on to the village of Lu where he crossed to the right bank of the river. He describes the mountains which flanked the valley to his left as partially snow-covered but very lofty. The valley here was very rich in cultivation, and the Lama writes with a pleasant reminiscence of the luxuries of turnips and cheese.

41. At Na-shi he found another monastery and considered it safe at this distance from the *Dsong* to visit it. The images which he saw here struck him particularly. There were eight of them placed in a circle which were of particularly ferocious appearance, called *Gozi Gomazi* or the eight doorkeepers of the world. Four of them represented the cardinal points of the compass (*Gozi*) and the other four (*Gomazi*) held each in his left hand a *benda* or bowl representative of the world placed in it. In their right hands they held respectively, a hook, a snare, a chain, and a bell. In separate groups were other images built after the *Ngālu* style, god embracing goddesses of which the chief is called *Chhe Chhukheruka* (or 'kind to the virtuous'), and all are placed with certain reference to the points of the compass. There were other images of another class called *Tshegonpu* of which the figures possessed either four or six hands. Na-shi, which is a branch of the great Mindol-ling monastery, stands surrounded with trees, gardens and cultivation.

42. The Tamshul river appears to be bridged at frequent intervals: the Lama mentions frequent crossings of the stream, and invariably speaks of the bridges as being stone built, solid, constructions. The upper Tamshul is well cultivated, with many villages and wide, grassy plains flanking both banks. From it tracks branch off south-eastward over the mountains which separate the valley from that of Shār-dongkai, leading onwards to Men Chhuna. The best known

of these follows a lateral valley from the neighbourhood of Poido and leads straight to Shardongkar. The upper Tamshul valley constitutes the Dama district of which the chief village is 'lamshul itself, and it is locally reputed to be the finest village in all the Lhobrak province. The mountains to the south-east culminate in a series of magnificent peaks towards the head of the valley; many of which were geographically fixed by the Lama's observations. At the foot of their western slopes there stretches a broad, grassy plain, about 10 miles in length by 6 or 7 in width, and at the edge of it, closely bordering the stream, is the village of Tamshul. Houses are scattered over this plain, through which runs another road to Men Chhuna eastwards.

43. The Lama crossed out of the Tamshul valley by the Shar Khalep pass into the great desert plain bordering the Trigu lake, so that his information about the sources of the river and the various routes which follow its branches over the intervening watersheds into the Yāmdrok Kamoling is gathered from hearsay. The main source of the Tamshul is said to be under the Chunak La affording the main route, and the best, but two others are also available, and he gives the following names of villages, &c., occurring on one of them,—the Dzaring La route, *i.e.*, Kalung, Tuktsa, Dzaring La, Sogay, Yāmdrok Kamoling.

44. From Tamshul he went straight northward, gradually ascending over a gravel-covered plain, passing the monasteries of Kimon, Tashe Choilang and Nao Chok, to the village of Hai-de. Here cultivation seems to grow scanty, and the ascent to the Shar Khalep pass (16,800 feet) was difficult and tedious. The descent over the northern slopes proved comparatively easy and at the foot of them he encountered wide, flat, stony plains shewing a marked distinction in characteristics from the Sikkim-like country he left behind. His expressions of satisfaction at again beholding the most uninviting features of Tibetan scenery seem a trifle misplaced. From the foot of wind-swept Shar Khalep pass to the borders of the Trigu lake, only one halting place is to be found. It is a wretchedly forlorn *jikyop* standing alone in the open expanse of stone-covered plain, where nothing exists but herds of wild goats and antelope. It is kept by an exiled and half-savage old couple who find firing (obtained by collecting the droppings of wild animals) for the traveller, in exchange for food. It seems to be a specially favourite haunt of the robbers who infest these plains, and who, with blackened faces and most inferior weapons, generally find an easy prey in small unarmed parties travelling to Lhāsa. One night at this wretched hostelry was quite enough for the Lama, and next day he found himself on the grassy plain which immediately borders the Trigu lake. This lake seems to possess nothing of interest to invite description: the Lama only refers briefly to the hot-springs in the neighbourhood, and his precautions against the robber bands.

45. From the northern end of the Trigu lake (15,500 feet) he ascended the Che (Cheya) pass (17,000 feet) which he found to be easy of ascent but difficult on the northern side. Here again after reaching the head of the Yarlung river, he encountered signs of cultivation and civilized humanity. *Men-dongs* were frequent, and flocks of sheep and goats were scattered over the plains, till he reached the junction of two heads or feeders of the Yarlung, where he changed his route to the south-east, following up the course of the second feeder in order to visit the monastery of Kang gyi oo, high up on the mountain slopes. Here he found the chief Lama (who is the incarnation of a saint who died exactly 774 years ago) in a state of contemplation, and he accordingly was able only to obtain a blessing without the satisfaction of an interview.

46. Returning to the main stream, he made his way northward through a valley which increased in fertility and richness with every step he took. The Yarlung valley is famous throughout Tibet. At Cho-di-kong, where his route-survey closed with that of Pandit Nain Singh, he mentions willows as being abundant on the river banks. From this place again there is a branch road to the Men Chhuna district about which we are told nothing except that it passes many monasteries. A rich, damp soil, with abundant crops, flower gardens round the monasteries, temples and *men-dongs* must have been in pleasant contrast to the sterility of the plateau of Trigu lake, but the Lama tells us little about the nature of the cultivation or of the architectural beauties of the Yarlung valley, and only dwells on the great value and importance of one particular temple at Kha chung na, which was built as a protection against the devils and ghosts of certain men who were murdered there many years ago and have chosen to haunt the place ever since.

47. The valley of the Yarlung must be rich and abundantly fruitful, or it would hardly maintain the number of monasteries to which our traveller alludes, and whose legends and traditions he is never weary of relating. The copper and gilt images with which they are filled left a deep impression on his mind. Possibly the tradition of severe floods which have at times depopulated and laid waste the valley may have more substantial foundation in historical fact than other legends to which the Lama refers.

48. At Gyanthang pompa he left the valley and crossed a pass over an intervening spur to Yarlung shoi where great preparations were in progress at the monastery for the reception

of the "King" who was expected to pass that way. It is about Yarlung shoi that the Lama tells of the existence of certain stone huts or hovels by the roadside in which old men live who have no access to the outer world except by means of a hole in the wall of the hut; through these holes offerings are received on which they depend for existence. Shertak (Yarlung She ta) is described as a monastery situated on a lofty, black, conical hill overlooking the Tsang-po. There is a legend about this hill which may be worth a passing reference. The first king of Tibet was supposed to have come down from it, and it was his wondrous beauty of person alone that recommended him to the Tibetans as a suitable ruler. The Lama maintains that it was really a native of India who founded the kingdom of Tibet, in the person of this stranger, 1,580 years ago.

49. At Tsetang, to which place the Lama next made his way, Muhammadan shops were found in the market in which wheat and meat soup were sold. It is curious that the Lama notes that pork is specially cheap at this place, 3 annas being the price paid for a pig's head and 8 annas for a quarter. Radishes, carrots, and yak's flesh are also sold in the public market. The Muhammadans intermarry with the Tibetans. From Tsetang the Lama turned east along the valley of the Tsang-po and passed through a wealthy district adjoining the river. He crossed the Tsang-po by boat not far from Tsetang, but it appears to have been rather the result of accident that he was able to secure a passage, and not by the use of any regular ferry at this point. Along the left bank he now worked his way eastwards, visiting the chief monasteries and places of interest, whilst never losing touch with his work, and concealing his instruments every night as best he could before accepting the hospitality which was invariably shown him.

50. In order to reach the valley of Wokar, or Hoka (Öka), through which a river (called the Mik Chu in P. Kishen Singh's map, and Zingchi by the Lama) joins the Tsang-po from the north, the Lama crossed a pass called the Kola La, the descent from which brought him immediately into the valley. He describes this pass as impracticable for ponies and yaks, but he does not indicate the existence of any other more open route along the left bank of the Tsang-po. At the time of his visit to the Wokar valley public expectation was directed towards the visit of the King of Tibet who was travelling on one of his periodic tours through this part of his dominions. It is interesting to note the feeling of respect and almost of affection which is shewn throughout the narrative in speaking of the 'King.' On these tours he is in the habit of arranging his own transport and commissariat, leaving no opening for extortion and overcharge on the part of his officials. It is said that a royal progress is infinitely cheaper to the country than a tour of the Dalai Lama; and the people welcome the advent of the king amongst them by decorating their monasteries and high places with gay silks and embroideries, and by varied performances on their national musical instruments. The Lama gives us but little detailed geography of this part of his travels. His narrative is chiefly a list of the monasteries he visited and a weary repetition of the names of the gods and images contained in them, with many weird legends either about these same gods, or the monasteries themselves and their origin. He describes a range of mountains called the O-do Kon Chok Kang which separates the Wokar valley from Chukurgyi; Chukurgyi being noted as the site of one of the six leading monasteries in Tibet. From Chukurgyi he says it is but two days' journey to the district of Takpo of which he gives no further details than that it contains three *Daongs* and eight monasteries. The visit of the king to Wokar and the consequent unusual collection of people in the neighbourhood proved very inconvenient for the Lama. A few indiscreet questions brought him again under suspicion, and he only escaped being handed up to royal authority by liberal bribes. He retreated to the village of Cheimon (13,300 feet) from which place he set himself assiduously to visit all the neighbouring monasteries. The Zinchi or Wokar valley was traversed by P. Kishen Singh in his Mongolian exploration. At the head of it (according to the Lama) is the Ma gula pass leading down to the great high road from Tibet to China; dense forests clothe the hill sides and the open part of the valley is filled with cultivation, chiefly barley. Incidental to his narrative are many quaint stories of Tibetan manners and customs which shew that there is as much, if not more, freedom accorded to the women of Tibet as to those of any European kingdom. The Lama was constantly indebted to the kindness of the gentle sex for shelter and food, and he relates on one particular occasion, how, having experienced an undignified repulse from the premises of a wealthy Tibetan gentleman, he accidentally met the man's daughter-in-law immediately afterwards, and related his grievance with a good many uncomplimentary remarks about her relative. The girl laughed, and took him straight back to the house from which he had been ejected and treated him with the most flattering personal attention. She was very fair, says the Lama, and he gives it as the result of much varied experience that a fair complexion always indicates true kindness of heart.

51. From the Zinchi the Lama returned by the northern bank of the river to Samaye, visiting the Sangri Khama monastery on his way. He tells of scenery about here that must almost rival Kashmir, woods and gardens where the walnut trees especially attracted his attention, and above all, excellent roads "like the roads about Darjeeling."

52. The eighth book of his adventures is full of queer legends about the Sangri Khama monastery, and about Damsa Thil, which is overshadowed by a hill covered with cypress trees, all of which sprung from the scattered hairs of a saint which were cast to the winds hereabouts. The monastery of Ngari Tratsang also attracted his attention, with its surroundings of houses, gardens, streams and trees, now tinted and brightened with the touch of early October.

53. Passing Ka-pa-tu (Gerpa) where there is a ferry, he passed over sandy plains adjoining the river till he reached the "two legged" temple of Samaye and, a little further, the market place. The Samaye monastery is one of the most important and richest in all Tibet. Here there is a large image of Sākya Muni 10 feet high, made of gold and brass, and many sacred treasures. Samaye is literally enveloped in legends, some of which as touching the early rise and progress of Buddhism are interesting. The first growth of religion in Tibet is ascribed to the teaching of a learned Pandit named Berotsana, who was invited to visit Samaye from India in the reign of Thisondiwootsen. The intrigues of the Queen and the Court procured the banishment of Berotsana, who was at first sentenced to death by drowning in the Tsang-po. With the connivance of the King he escaped this fate, but his escape was discovered by the Queen who immediately sounded the "drum and oyster", and proclaimed to the Court that the heretic was yet at large. Finally he was banished but only to be replaced by a yet more learned Pandit named Penchhen Bimamitra, who at once established his position by declining to salute either the King, or the great god Nambari-angdzé. After much expostulation and reasoning on the subject on the part of the King, the Pandit consented to salute the god in the presence of the entire Court; but as he bowed down before it the image fell to pieces. With a wave of his hand it was again restored as good as ever, "perhaps a little better", our Lama says; and the people and the Court believed on him. By his influence Berotsana was recalled from exile, and it was under the teaching of these two great Indian Pandits that Tibet grew to be a religious country.

54. Samaye is about 11,500 feet in altitude above sea-level: a wall of 1700 paces in circumference encloses its religious edifices, including a temple and four large monasteries as well as small ones. The roof of the temple is of gold and copper, and its construction is evidently peculiar (unintelligible from the Lama's description), as it is regarded as miraculous by Tibetans. In all Tibet, says the Lama, "there is no place so celebrated as Samaye, and throughout Tibet and Sikkim there is not a man who does not worship Samaye Gyalbo, the great god enshrined in its temple." The market of Samaye is small and dear; meat only being reasonably cheap.

55. On the 7th October, the Lama crossed the Tsang-po at the Tsong-ka ferry in order to visit Mindol-ling. Here the river is more than a mile broad. Turning westward along the southern bank he went first to the village and monastery of Tsong du ta tsang, which he describes as a large and flourishing place full of trees and gardens and well known to the devout for the number of its prayer cylinders turned by the Mindol-ling stream. Mindol-ling includes one nine-storied temple surrounded by about 20 minor temples. Its monastery is approached by a massive stone staircase, and within it are numbers of beautiful images, and a large store of sacred books. Here our Lama interviewed the grand Lama and had tea with his minister, from whom he gathered much information concerning the monastery and its history. It used to be the custom for eight scholars of Pemayangtse to visit the monastery every year and live there and study at their own cost. The rules of Mindol-ling are exclusive and strict. These scholars had to be of good family, to be total abstainers from wine and women, and they had to vow implicit obedience to the monastic rules. Latterly, however, they have ceased to present themselves at Mindol-ling for education, and the reason assigned to the Lama was the poverty of the country of Sikkim from whence these scholars usually came. The *terai* no longer belongs to Sikkim. Its Rāja is poor, the Lamas are poor, and no longer able to pay their own expenses for travelling and maintenance at Mindol-ling. Of the descendants of the Dongpa Lama of Mindol-ling one is selected to rule the monastery in succession, and is vowed to celibacy; another marries and his descendants again succeed to the Government. Should the latter die, however, the 'throne' Lama, in spite of his vows, is expected to marry the widow, and raise up his own heirs to govern. A total failure of heirs is attended by widespread calamities—war, famine and general disaster. A whole book of the Lama's records is devoted to a detailed description of the 17 transmigrations of Chhoigyāl Terdāklingpa the founder of Mindol-ling; with these we need hardly trouble a geographical report.

56. From Mindol-ling he returned by the same road to the Tsang-po and visited Ta-thang monastery *en route*, where he was nearly torn to pieces by dogs. A little to the south-east of Ta-thang is the monastery of Champa ling, which did not escape our devotee. He describes Champa-ling as a trade mart, but it is difficult to account for its possessing any importance in this particular, on account of its geographical position, which is apparently apart from any trade route. The nine-storied temple of Champa-ling is surrounded with the usual atmosphere of local tradition; amongst other things it is said that the original design for the temple was

found cut on a radish, a method of illustration which seems applicable to many Tibetan structures. Passing the Man-dsu ferry the Lama made his way westwards along the southern banks of the Tsang-po to Lhat se, after a harmless encounter with robbers on the road.

57. From Lhat se he went to the cloth mart of Kedesho Dzong, from which place he turned southward into the Thib valley. The Tsang-po frequently overflows at this point of its course, and the Thib valley is inundated for some distance up the course of the stream. Leaving Thib, the Lama crossed the Tsang-po near the mouth of the valley and visited the monastery of Dorje-thag. At this point the river is about 800 yards wide, very deep and full of fish. From Dorje-thag, which is a monastery with a chequered history, having been destroyed by Mongols and periodically restored, there is a road northward leading to Lhāsa riā Phurin and Nango-so-na over the T'ungo pass, and this the Lama (forgetful of the promises made at Lhakhang Dzong) determined to follow. As far as Phurin he found the road good and easy of ascent. After this, however, he describes it as passing over rough gravel impeded by thorny bushes. The stream was constantly crossed and recrossed by bridges until a *dök* was reached called Kyepa-thia Dok, 14,340 feet above sea-level. Two and a half miles further the T'ungo pass was crossed at 16,330 feet, and a flattish, open, grass plain found at the summit of the pass. After crossing this plain round the head of a stream draining northward, a second pass was surmounted from which the city of Lhāsa could be seen stretched out below "as in a looking glass." Behind it, northward were the hills of Pen-pa-go: monasteries and villages lay thickly scattered around, and conspicuous amongst them wound the road to Tshorphuk. The T'ungo pass is described as a difficult pass from the south with an easy descent to the grassy plain that the Lama speaks of. From this again the ascent to the second pass is easy and the descent on the northern side difficult, although yaks and ponies can cross. The descent is steep for about 4 600 paces, when a more gradual fall inclines towards Thiba (Tibah). Approaching the river Kyi Chu the monastic palace of Tse-chhog-ling (Tshe-chog-ling), one of the residences of the king, was passed on the left, and then the river itself barred the road to Lhāsa. At the point where the Lama crossed on the 9th October this river is 500 paces broad. He crossed by moonlight under the guidance of certain boatmen who were so drunk as to leave a lasting impression on his mind. From the north bank of the river he made his way by night through marshy ground and under the walls of endless gardens, till he reached the outer circular road of Lhāsa. Here he was warned beforehand that he would find considerable difficulty in making his way about, on account of the packs of hungry dogs that infest the purlieus of every Tibetan town, and which appear to be especially savage and dangerous about Lhāsa. To guard against this difficulty he provided himself with bones, &c., with which he beguiled the dogs as they disputed his way. Thus he passed slowly round, south of Lhāsa, to the road to the Dre-phung monastery, at which place he hoped to find friends and shelter. At 2 o'clock in the morning, thoroughly wearied out, he lay down under a tree and considered how he had better conceal his instruments and records whilst staying in a place where he would be subject to such close supervision as Lhāsa. He hit, at last, on the expedient of placing them all in a bag, sealing it up carefully, and depositing the bag with his friend at Dre-phung. In the early morning he found to his horror that the place he had selected for sleeping was one of very peculiar sanctity. He was speedily informed that to touch a twig of that tree, or to make tea under it, would be an offence that would be promptly resented by the guardian deities of that place. Sadly, he decided to move on, and this resolution was quickened into activity when he discovered that his resting place, in addition to being specially sacred, was also a special rendezvous for robbers and bad characters of all sorts. He was told that it was only by a miracle indeed that he had not been murdered. Near by this tree he noticed a fine stag of the *sambhur* species, which had been offered as a gift to the local gods, and was allowed to live and feed at will on the premises. At Dre-phung monastery he found his friend, who received him hospitably and made both him and his wife welcome. Here the sealed bag was for the present deposited, whilst, with the guidance of a Mongolian priest, the Lama set out to examine the town and find lodgings for his party. His first venture was with a Chinese Sergeant of the celestial army, who kept a clean and tidy house "with a nice place for the gods" and seemed prepared to treat him well. There was this advantage about lodging with a Chinaman, that his baggage and property would not be searched. An indiscreet enquiry after the Nepālese resident, however, raised the Chinaman's suspicions. Relations between the Tibetans and Nepālese Government were at that time decidedly strained, and the Lama would have done better to have held his tongue. He and his Mongolian friend were turned out with abuse, and he had to seek a lodging elsewhere. He soon found another house where he was recognised by friends, but this recognition did not save him from having his property thoroughly searched by the police, who had been informed by the Chinese Sergeant of his visit. The *Dingpon*, however, stood by him, and, on his part, informed the Nepālese Agent of the Lama's visit, and procured him an invitation from the agent. With this the Lama lost no time in complying. The Nepālese residents's house is close to that of the Chinese resident, and is a large four-storied building. Here the Lama was received with more than ordinary courtesy. He was greeted with the English formula. "How do you do," and was given a seat in the resident's presence, whilst the *Dingpon* himself stood by "with his hat in his hand."

Food was prepared for him and meanwhile he was kept amused and interested by the resident's conversation and by the pictures that were shewn him of some of the principal buildings in Lhāsa, including the palace of Po-ta-la, and the great monasteries of Tibet. All these pictures were hung with silk. On the whole the Lama had no reason to complain of his reception. He was taken into the confidence of the Nepālese resident, and his position in Lhāsa was, to a certain extent, secured. He then proceeded to his devotional pursuits and commissioned his host to purchase butter wherewith to fill the golden lamps before the shrine of Buddha.

58. On the 16th October, the Lama commenced a survey of the town of Lhāsa under cover of an umbrella which he found sufficient to disguise his proceedings. For two days he quietly pursued his way, taking notes when he thought himself beyond reach of observation. He makes it 9,500 paces round the city. He found it necessary to check any intimacy between his wife and the wife of his host, for fear of discovery, whilst at the same time he extracted much information from his host himself about the Tibetan Government and various ceremonies and religious observances. All these were noted by his wife, and he refreshed his memory when preparing his narrative subsequently.

59. The Lama ascertained a few facts about the selection of the present Dalai Lama which may be of interest. Formerly (according to the Lama's informant) a golden vessel was used in which the slips of paper were placed on which were written the name of the selected candidates for the position of Dalai Lama. This was prevented by the present Na-chung Chhokhyong (or chief oracle of Tibet, according to Sarat Chandra Das) who prophesied disaster in the shape of a monster appearing as Dalai Lama, if this practice were continued. On the other hand he foretold that the present Dalai would be found by a pious monk in person, and that his discovery would be accompanied with "horse neighings." The 'pious monk' proved to be the head Lama of Gaden monastery, who was sent by the oracle to Chukurgyi, where he dreamed that he was to look in the lake called Lhamoilamtsho for the future Dalai. He looked, and it is said that, pictured in the bosom of the lake, he saw the infant Dalai Lama and his parents, with the house where he was born, and that at that instant his horse neighed. Then the monk went in search of the real child, and found him in Kongtoi, in the house of poor but respectable people, and recognised him as the child seen in the lake. After the boy (then a year old) had passed the usual ordeal required of infants in the recognition of the property of the previous Dalai Lama, he was elected as spiritual head of Tibet. The Lama further confirms the accuracy of Sarat Chandra Das' statements about the formation of the Tibetan Government. He says that the Desi Gyalbo, the regent, or king, of Tibet, who ranks as second only to the Dalai Lama, may be elected from amongst the Grand Lamas of one of four *lings* or monasteries, i.e. (1) Tsechok ling, (2) Chenmoi ling, (3) Kundul ling or (4) Tengyal ling. The present regent (or king, as the Lama always calls him) is from Kundul ling. These spiritual chiefs (for the institution of Desi as the secular ruler of Tibet apparently lapsed about the year 1680 when the Mongolian conquerors of Tibet retired from interference with its Government) are all incarnations of one or other of the previous rulers of Tibetan history, and are apparently embodiments of both secular and religious wisdom. The present regent is "Kundul ling" and he is apparently exceedingly popular. He is described as "young, pious and generous-minded" and "very kind to all people." A previous regent, of whom the Grand Lama of Chenmoi ling is an incarnation, was a poor settler in Tibet who became a monk in the Ser-ra monastery by the lucky accident of a dream that pointed him out to one of the professors of the monastery as a remarkable man. Under the tuition of a Mongolian monk he became learned, and by his assistance he acquired wealth, and finally became king. It is to this ruler in particular that Tibetans ascribe the regeneration of the morals of Lhāsa by a process which is here indescribable. Every article of dress that the Lhāsa women now wear, such as the striped petticoat, the headdress, even the paint on their faces, is apparently a significant reminder of the pains and penalties that may attend any lapse from the paths of virtue. When he became king he was named Tshatar-numa-hang. According to both the Lama and Sarat Chandra Das, the spirit of Lön-pogar, a famous minister in Tibetan history, has united itself with that of the Grand Lama of Tengyal ling. The Kundul ling kings are incarnations of the famous Tatshak Lama. The Lama says that the Chinese Ambān is under the authority of the regent, and that under the Ambān are four *Shapchi*; under them again are 73 *Tsidungs*, and several *Kahdungs* (secretaries) who work in court under the Shapchi Lama. This is hardly consistent with the clear and concise account given by Sarat Chandra Das, who places the council of 5 *Kahlons* next to the regent, assisted by 1 *Kahdung* or secretary and 1 *Tsipon* or accountant. The Jongpons or district officers, and *Depons* or military chiefs rank next; whilst 73 pandits are retained at Tsi Namgyal Tatshang, the principal monastery of the Dalai Lama, to pray for the prosperity of the kingdom and long life of the Gyalbo. Apparently no state undertakings can be instituted without reference to the Na-chung Chhokhyong, a sort of sacred oracle ("deified god" the Lama calls him) of Mongolian origin, all of whose utterances are supposed to be inspired.

60. On the 2nd day of the 1st month of each year the Neechung Chhokhyong prophesies

the events of the year to come, assuming the position of the Zadkiel of Tibet. His consulting fee is said to be 10 *sangs* (5 rupees?), and he is evidently a general adviser to the public, besides being the state oracle. After consultation he presents a charmed scarf to his consulter, either white or red, according to whether the man is married or not. A great deal of superstitious reverence surrounds him; for instance, no one is allowed to look on him when he approaches Lhāsa. Incense is burnt before him, and he is surrounded by a staff of 70 Lamas. Even high state officials have been fined for looking on him whilst passing. The Lama gives us some interesting details regarding the *Monlan* (*Molam*?) holiday at the commencement of the new year which agree generally with the account given by Pandit Nain Singh. There are certain discrepancies as regards dates, however, which it is difficult to reconcile. According to the Lama the Na-chung Chhokyong is the only oracle consulted during the *Monlan*. A second oracle called the Karmasha Chhokyong (referred to by Sarat Chandra Das) is not then permitted to inspire men. The chief magisterial power is assumed by a Dre-phung Lama called the Shalngo by the Lama and Jalno by N.S. who (according to N.S.) purchases the privilege for 1½ months from the 3rd day of the 1st month. Only the Dre-phung monastery can furnish this Jalno. During this period he rules all Lhāsa at his own discretion, appropriating all fines, and making what he can of his bargain with the Government. The Dala Lama and the Gyalbo alone are beyond his control. The oracle of Na-chung Chhokyong then becomes supreme, and his commandments or orders are issued and read to the public by the assembled monks, perhaps as many as 10,000 times in succession. The monks are liberally rewarded for their exertions in repeating these formulæ at the rate of eight annas per volume. According to Nain Singh there is a grand procession and display of idols before Māchindrānāth temple on the 15th day of the new year. This is confirmed by the Lama who also agrees that the number of monks assembled of late years amounts to about 7,000.

61. On the 29th day of the first month, at the time of throwing the *Tormas* (images made of *rin*) one man who has been selected, and who is called the *Logon gyalsa* (or carrier of one year's ill luck), acts as a sort of scapegoat for the sins of the people and is hunted through the streets and market place of Lhāsa into the desert towards Samaye. For a week previously, he may be seen in the market place, where he is treated as a sort of clown, with his face painted half black and half white. He helps himself to what he wants at nominal prices, and goes about shaking a black yak's tail over the heads of people, who thus transfer to him their ill luck. Nain Singh places this ceremony at the end of the second month, and states clearly that the Shalngo, or Jalno's, authority, after lapsing for 24 days at the end of the first 23 days of anarchy, is then re-assumed for 10 days more, and that this ceremony ends it. Probably Nain Singh is correct, as the Lama also makes his expulsion from the city the final ceremony, and states that the Jalno's authority lasts 1½ months.

62. Previously to being exiled from the town, the *Logon* throws dice with the Jalno according to Nain Singh, or with the Lama of Changchup ling monastery, according to the Lama. Here perhaps the Lama may be the better authority. Nain Singh states further that they throw with equal chances. The Lama however, asserts that the Lama's die has six on all sides of it, whilst the *Logon* has one of the ordinary form, and that he is therefore bound to lose. This seems probable, as the *Logon* is always the final scapegoat, although it is publicly announced that if the Lama loses he and the *Logon* will exchange places. Then the *Logon* gets as presents from Government a white horse, a white dog, a white bird, a saddle, a small sum in cash, salt provisions, tea, &c., and other smaller gifts from the people. He is hunted with shouts and yells out of the town towards the Kyi Chu, which he crosses, and retreats to Samaye for seven days, where he is accommodated in the Lhakang (or dead house); from thence he goes to Tsetang for another week. Then again he moves to Lhoka for five or six months. He lives as an outcast, privileged to rob and even murder people. If he survives the rough treatment he receives at the hands of the populace for so long, he is then allowed to go where he likes. This account agrees fairly well with Nain Singh's.

63. There are two burial grounds in Lhāsa. The larger of the two is to the north-east of the town called Ragn, the other is near the temple within the walls of Lhāsa. Dead bodies are laid on a large flat stone, on which places for the limbs have been roughly hollowed out, with their faces to the sky and their limbs stretched out. "A smoke is then sent to the sky" and two vultures appear. If these vultures in their flight wheel to the right, then the soul is happy "in heaven," otherwise the vultures either turn to the left or go away. The body is finally torn to pieces and devoured by these birds. This apparently is the ceremony observed when bodies are not buried. It is the only one referred to by the Lama. The cemetery within the walls is most sacred, and no "ordinary people" are admitted to burial there. The stone is said to have been brought from India and is curiously carved. The Lama gives some particulars about the *Ragapas* (or dead carriers) of Lhāsa. They are not a race, but simply outcasts from society, outcasted for various offences. They are only permitted to live in houses or huts made of horns, no matter what their present wealth or former position may have been. These



*Bayepas* appear to be the pest of Lhāsa. Hardened by crime, and deadened by their occupation to all sense of humanity, they band together in a turbulent and unruly crowd, and endeavour to extort black mail from all strangers and travellers. The Lama was hunted by them into the market place of Lhāsa, where, to his dismay, they began to denounce him as a British spy. It seemed that amongst their number was a man who had served as a *jhampuni* at Darjeeling who recognised him. He only avoided an unpleasant exposure by sending for his friends, amongst whom was the *Dingpon*, and paying up the fees demanded for secrecy.

64. It is impossible in a geographical narrative of this description to give in detail the Tibetan legends and tales collected by the Lama in Lhāsa. I think, all the same, that they might be worth the attention of Tibetan scholars as assisting to illustrate the connection that must exist between the scanty literature of Tibet and that of other oriental nations. There is one story in particular, which might almost belong to the series of "Arabian Nights" treating of the first introduction of music symbolized by the harp, or guitar, (it is difficult to say exactly what instrument is meant) with some of the forms of higher civilization into Tibet, from China, by means of a Chinese princess named Gyaza. 'Once upon a time' (thus runs the story) the King of Tibet was warned by his oracles that unless he married a Chinese princess the Buddhist religion would decline. After some difficulty he selected one Lompogara as his ambassador on the delicate mission of securing the Emperor of China's only daughter. But Lompogara, on arrival in China, after many adventures, found three or four competitors in the field, amongst whom were the King of Persia and the King of India. Many miraculous feats were set by the Emperor to the representatives of the different suitors to perform; in all of which Lompogara was triumphantly successful through the strength granted him by his Tibetan gods. Amongst other performances he claimed the bride by the feat of recognizing her amidst 2000 of the most beautiful girls in China. Advised by an old woman with whom he lodged, he boldly selected the ugliest. This seems to be quite a new departure from ordinary legendary tales; neither can I recall anything quite analogous in oriental fable to the incident related of the princess, who consulted her own looking-glass as to the beauty of her intended bridegroom. The looking-glass, which at first told a flattering tale, finally represented her Tibetan suitor as a repulsive old man; on which she smashed her oracle to atoms. Mention, too, is made of a book which was the great Chinese oracle, called *Kabtsithamo*. "All that we do or say is found out in that book. In that book even the lice that are on the body of a man, and the leaves and fruits of trees are also found out in that book by calculations," says the Lama, in his quaint English. This book was thrown into the fire by the Chinese Emperor in a fit of rage, because it did not reveal to him, intelligibly, how Lompogara came to select the true princess. It is curious that a singular contempt for their household oracles seems to prevail in Tibetan tales. Finally the princess (who had throughout been in constant communication with a lover by the agency of a carrier pigeon) stole the household gods—the image of Sākya Muni, and the image of Jitsun Dolma Sungjen—and went off to Tibet—not with the ambassador who had claimed her, but with his assistant. Lompogara himself was detained for two years in China by the Chinese Emperor for the purpose of raising up descendants as acute as himself. At last he escaped by means of a device, and returned to Tibet. Here he found the princess still waiting for the King (who was apparently more interested in a Nepālese wife than in his Chinese princess) to claim her; and it was during this period of lamentation and woe that she introduced the harp, and through its instrumentality, appealed to the King, and gained his attentions. Thus all ended happily, except that the Nepālese princess disputed the maternity of the child that was born to Gyaza, and the King was apparently unable to settle the difficulty. He left it to the boy himself to decide, but, though that boy gave a decision that for strict impartiality was remarkable in one so young (he said he belonged to both) he had his eye unfortunately knocked out by the enraged Nepālese, who claimed entire possession of him, and thus satisfactorily proved that she was not his mother.

65. On the 19th October, 1883, the Lama packed up and started again from Lhāsa. For days he had been under apprehensions of being recognized again, and he had hardly stirred from his house. With difficulty he raised a pony and saddle to carry him, having no money to purchase them; but it happened that the wife of his friend the *Dingpon* was then at Darjeeling, so by giving what he calls a "promissionary note" for 125 rupees (or one Tibetan *dotchat*) on Darjeeling he secured the means of travelling in comfort.

66. At dawn of day on the 20th October, the Lama visited Chokhang monastery and paid his obeisance to the image of Buddha and prayed to him for his blessing. Then he started by the Yothok Sampa bridge road, passing the 'two legged' Palpokani churtan, and leaving Lhāsa to the east, not failing however to take his observations under cover of an umbrella, even before he was clear of the town.

67. Immediately outside Lhāsa he came to the same marshy tract which he has previously mentioned, at the end of which he found the main road. Irrigation canals appear to be



frequent, and to be only crossable by bridges of single stones 12 feet or more in length. From this main road Dre-phung monastery is visible; it is hid from Lhāsa by intervening hills. To the right of the road after leaving the marsh stands the palace of the Na-chung Chhokyong surrounded with walled gardens and orchards, with its golden-capped dome shining brightly in the sun. A little further are the gardens of Dre-phung within which the Lama was first lodged on his arrival. The presence of his wife with him prevented him from being lodged in the monastery itself. At Dre-phung the Lama visited his friend Hangdong, who stood by him so well at first, and paid his usual devotions at the monastery itself. There are said to be 10,000 monks now attached to this monastery. Through the agency of his friend, the Lama engaged a Mongolian monk to accompany him on his return journey to Darjeeling and after a cordial farewell from his friends, he proceeded on his journey, and passed through the village of Chiri (where yaks are killed and their flesh sold by the Muhammadan butchers in Lhāsa) to Dong-kar, the first stage out of Lhāsa. Proceeding by the main road to the south-west he crossed the Til Chu Sampa by a stone bridge 120 paces long, and followed the right bank of the Kyi Chu. About four miles from the bridge he describes a perpendicular rock on which a gigantic image of Buddha has been carved which is walled in and roofed over with planks. From this point he obtained his last view of Lhāsa. Barley cultivation and orchards were frequent all along the road.

68. On the 21st October he continued his route from Netang along the banks of the river which soon became precipitous and rocky, the road overhanging the river in some parts. The villages he passed were mostly insignificant till he reached Janu (Jang-me) "where there are many houses and good cultivated fields of barley, and gardens of willow trees." That night he halted at Tsha-bu-na.

69. Next day he travelled through Chu-shul, where the Gelong *Tahsildar*, to whom he several times refers, died on his way from Lhāsa, after proceeding so far by boat. His body was taken to the south side of the Tsang-po and there cut to pieces, after the usual custom, and given to the vultures. His wife, who was with him, had to surrender most of her dead husband's property to the rapacious *Ragapas* who performed the funeral rites. A little beyond the village of Jegang (? Sas-kang in the map) he arrived at the north bank of the Tsang-po. Here there is an old iron suspension bridge, so old that no one uses it, but makes use of the ferry instead. The bridge is said to have been erected by Saint Tub Thobchāk Sampa 300 years ago.\* The river here is about a quarter of a mile broad according to his estimate. After passing a wide plain "four miles square" he reached the village of Toitra (not shewn in the map) near which he halted. His route thereafter lay over the Kam-pa pass to Tama lung on the banks of the Yam-drok Tso or Lake Palti. He determined the height of the pass to be 14,950 feet; the chief difficulty he found in crossing was meeting with the baggage and retinue of the Chinese Ambān who was on his way to Lhāsa, and who completely blocked the road. The width of the arm of the lake opposite Tama lung is about 1 mile. It is said to be frozen in winter so that Tia-gang on the opposite bank is easily accessible.

70. Following the eastern margin of the lake he passed through the villages noted in the map, till he reached the Phu-chu pass. This pass is about 15,500 feet high, and a severe snow storm which caught his party on the pass, much impeded them. The force of the wind during these occasional storms in Tibet is evidently much the same as prevails so constantly in Turkistān. It is impossible to face it. The road round the eastern margin of the lake is by no means level or easy to follow. It constantly crosses small but rough spurs running down from the hills on the north-east, occasionally leaving the lake for many miles, and again approaching its shores. Each stream that is crossed, draining into the lake from the north-east, affords some sort of a track or pass across the intervening mountains into the head of the Thib valley, leading mostly to Ton-naingyaling (Fort), until Tang-da is reached, when these north-easterly passes carry the traveller into the Yam-drok Kamoling, or great grassy plain to the east of the lake. The Lama experienced very little hospitality during this part of his journey. He was constantly unable to obtain a night's lodging, and had to put up with a sheep pen or some similarly rough accommodation. He was specially careful to avoid the *Dzongs*, where the presence of Government officials might have been inconvenient. As he says himself "if a traveller in Tibet can take care of himself in a *Dzong* he need have no fear elsewhere." Between Tang-da and Shah-shi he found the flanking hills covered with snow. At the tail end of the lake he found great difficulty in crossing the stream which drains into it from the grass plain of Yam-drok Kamoling. The plain he reckons to be 12 miles from west to east by 7 or 8 broad. Here herds of ponies are pastured, which live in a semi-wild state. Some of them followed his own animal for many miles.

\* The bridge is described by P. Kishen Singh as follows:—The bridge is formed of two iron chains, one on each side; from the chains thick ropes are suspended to the depth of four yards; by these ropes, planks, three feet long and one foot broad, are supported lengthwise so as only to admit of one person crossing at a time. The chains are stretched very tight and are fastened round huge blocks of wood buried beneath immense piles of stones; the length of the bridge is about 100 paces; when we crossed the surface of the water below the centre of the bridge was about 50 feet, while at the two ends it was much more.

after crossing the stream. Still tracking out the edge of the lake, he passed through Kha-mi-do (Mi-do), and over a local pass (the Gyanju pass) to a plain to Nyema lung; thence another pass led him between the great lake and a small satellite lake called Rombudsa Lake, across a deserted plain to the Ka-bu pass over a spur which trends down to the lake from the southern watershed. From the Ka-bu pass he descended again into another dreary deserted expanse of plain covered with a coarse stiff grass, from which alternative routes presented themselves. One path branched to the south-west over the Se-ra pass; another ran north-west to the village of Sha ri. This he eventually followed in order to secure a night's shelter. To reach Sha ri the party had to cross another small lake (apparently fordable) closely bordering the Yam-drok Tso or Lake Palti. At Sha ri the usual difficulty about lodging presented itself, but was overcome by liberal *bakshish*. A long day's journey of 19 miles, hugging the southern edge of the lake, and passing through somewhat more cultivated country with villages at intervals on the route, brought our travellers to Tag-lung (Tra-lung) once again, where the Lama lost no time in hunting up his old host who had befriended him on his journey to Lhobrak.

71. On the 29th October, he passed a much needed day of rest at Tag-lung (Tra-lung), writing up his journal and feeding up his hard-worked ponies and donkeys. From Tag-lung (Tra-lung) a long day's march of 20 miles across the Dug pass brought the party to the grass plain at the western extremity of the Pho Mo Chang Thang Lake, a lake which has already been described by the Lama (see para 29). The route passed the Prashichödzong monastery—a branch of the monastery of the same name in Bhutan. Here they found a small village of about 20 houses grouped round the monastery, and plentiful crops of barley from which they replenished their stores. Thence over a wild grass plain passing two *dōks* (herdsmen's camps) on the way they gradually ascended by a steep and difficult route to the Dug (or Tug) pass, nearly 16,900 feet above sea-level. The intense cold and bitter winds made the crossing of this pass a perilous undertaking, and though the descent on its southern face was easier than the ascent, they were overtaken by darkness on the frozen plain at its foot before they could reach any habitation. Here, in this plain, a misfortune befell them; one of the donkeys falling on a frozen pool of water and breaking its leg. So, here they stayed for the night without tents or food, and were unable to stir till the morning sun warmed up their benumbed and frozen limbs and they could make their way to the Tsho-kong *dōk* a few miles further on. It is worthy of remark, as illustrating a pleasant phase of Tibetan character, that the Lama gave a liberal reward to the herdsmen for fetching the disabled donkey to the *dōk*, where they left him with the best possible chance of eking out a precarious three-legged existence. Few natives of the plains of India would have put themselves to such expense and trouble about a donkey. The *Dokpas* (or herdsmen) of these parts are all of the *Horpa* caste, they live in tents, and are under the Shapeh Kampa.\* They are taxed to an extent of one *dotchet* (125 rupees) per annum. Their tents are made of coarse black yaks' hair, and can accommodate 30 or 40 people; and they consider themselves of a distinctly higher caste than Tibetans, placing themselves on a level with Mongolians. Inside their tents boxes are arranged round the sides, with a small shrine in the centre of the tent. They are wealthy and prosperous, and can count about 15 or 20 *dōks*, or tent villages, round the Pho Mo Chang Thang lake. This part of Tibet has the reputation of being the coldest tract in the country. The snow frequently lies deep for 15 or 20 days at a time, preventing all traffic across the plains, which are about 16,400 feet above sea-level. In summer and early autumn these plains are covered with a short stunted grass. Striking westward from the end of the lake, the Lama crossed the plain to the Lābtse-kyaro pass (16,600 feet) leading into a valley drained by an affluent of the Niru Tsang-po, which itself drains into the Nyang river about a day's march above Gyantse. The pass was easy but snow lay about at intervals, and the frost was severe, rendering the continual crossing of the stream west of the pass a matter of difficulty. At Rob-sang *dōk* they pitched their tent in "level green fields of grass" after an 18-mile march. At Niru-toi village, which they reached next day, they struck the Niru river, and here again the Lama describes wide grassy plains with villages occasionally scattered in single huts, but more frequently clustering close together. Crossing the Niru river by a stone bridge, they pushed on as far as De lūng *dōk*, where they camped in a sheep fold.

72. On the 3rd November, the Lama crossed the Rob-sang pass (16,400 feet) by a road which as usual was difficult on the north-eastern side but easy to the south-west. It seems to be almost an universal feature of Tibetan passes that the northern slopes are the most difficult, a fact which may possibly be accounted for either by general geological configuration, or by the fact of the northern slopes being less subject to the fertilising influences of the sun. At Tāg-tsa *dōk* at the foot of the pass, they found large flocks of sheep and herds of yak, and a little further on they sighted the Chumalhari range to the south. Passing over level plains from which the Ka-la lake was visible to the west, they reached Kongmo *dōk* on the evening of the same day, and Kāmāh at the northern foot of the Yām-tse pass next morning. From Kāmāh a level

\* N.B.—The Lama says previously (see para. 29) that they are *Horpas* and *Norpas*.

road runs direct to Ka-la. From the Yām-tse pass (16,200 feet) a view of the Tūm Tso (lake) was obtained, and its outline sketched by the Lama. He only remarks that "it looked green." Crossing the Tumparab Chu which flows from the Tūm Tso to the north-west and drains into the Ka-la lake about 15 miles further on, they again crossed a pass and descended to Men gang at the head of the Bam or Kham lake. To their disappointment Men gang proved to be a deserted village, but they obtained assistance from the village of Samtsho a little to the north and close to the edge of the lake. A monastery called Lab Chhyi (Lap-Chi) is perched on a hill to the north of the lake, said to be a branch of the Lab Chhyi (Lap-Chi) monastery of Mount Everest (or Lab Chhyi Kang). Nine miles from Men gang in the south-westerly direction, over open plain, they came to the village of Ramme (or Hram-me) which gives its name to the lake. The southern affluents of this lake drain direct from the Chumalhari mountains. Still continuing on the same course the Lama passed the monastery of Lha wāng po Shyag chhen (a branch of Labrangtai) and reached the village of Shur, where he camped for the night.

73. On the 6th November he reached Lhegiu (or Shegyu?) where he halted on the 7th and 8th for the purpose of collecting information about the trade route passing through Phāri. Finding that his own route would join the main trade route at Tang pass, and observing that there was considerable traffic along that route and that he might be recognized he determined to pass the Phāri Dzong by night.

74. He started on the 9th November for the Tang pass (15,000 feet) which he crossed without great difficulty and descended to the village of Chhukia. He dare not enter the village for fear of recognition, so passed on to Chātsa monastery. His principal risk of detection lay in his botanical specimens, which he found it impossible to conceal. At the Chhukia monastery he found a friend in the Lama, who was acquainted with his former host at Shigātse, and who, after much persuasion, was induced to lend him a guide to take him by night past the Phāri Dzong so as to hit off the Khangbu road at the end of the plain. This was safely accomplished, and the Lama found himself again on well known tracks after a wide detour of about 20 miles traversed by moonlight.

75. On the 10th November, starting early and travelling all day, they reached Takarpu Dōk at night where they hid in the jungle for fear of robbers. Next day they followed the course of the Ammo river, constantly crossing and recrossing by bridges. The Lama tells us that the grass of the open valley is particularly good, and that the people of upper and lower Tomo gather together in the summer months for the purpose of cutting and stacking it. Passing travellers even have to pay for the use of it. The length of this grass plain is about a mile by half a mile in width. Halting a night at Galing in upper Tomo a village of double-storied stone-built houses, they passed into lower Tomo. There are apparently four places where traders and travellers are examined *en route* between Tibet and Darjeeling on this line, *viz.*, Phāri, Khangbu, the bridge of Shāmchen, and Galing. Lower Tomo is a flourishing valley, in which villages are many, and cultivation apparently abundant, there being roads on either side the Ammo river. Gangu is mentioned as a large village, but was not visited by the Lama, nor was the Bakcham monastery, past which the direct road from Khangbu runs. Passing Eusakha on the other side of the river, the Lama halted for the night at a cave which seems to be a recognized halting place, and thence sent into Chum-bi for his nephew (a Lama of the Pemionchi monastery) to meet him. He could not visit Chum-bi or pay his respects to the Sikkim Rāja on account of his poverty-stricken condition. With this nephew's assistance he passed Chum-bi that same night, and reached another cave at Kidong. Here two or three days were spent in obtaining coolies and resting the foot-sore animals. The gravel plains of Phāri seem to be specially trying to travellers, who wear out their shoes over them, and lame their animals. The Lama more than once refers to this difficulty.

76. On the 16th November the party left their cave, where they had been visited and feasted by their relations at Chum-bi, who, however, kept their presence there a secret, and crossed an intervening pass, descending to the Dhangsheo cave, the first stage out of Chum-bi. Thence they made their way past the Thsoloima lakes, formed by the drainage of the Cho pass seeing occasional *dōks* on their right and left, to a place called Simoighyptsuk (which means "the monster's furnace"—an appellation to which a legend is attached, which is not worth repeating) 9½ miles from Chum-bi. Here they halted, and on the 17th November crossed the Cho pass (14,550 feet) where the Lama closed his long and well-sustained survey. Pursuing his journey over well-known country, with many halts, the Lama reached his own monastery, (Pemionchi) on the 6th December, where he duly entertained his brother Lamas with money obtained from Darjeeling, and left a sum in deposit the interest of which was to pay a man to turn the *mani* or prayer-wheel day and night. He offered presents to the monastery and received the blessings of his own chief Lama, who blessed him "with praying and by keeping most precious and valuable clothes of ancient Grand Lamas of the *Dzochhen* sect, and by the relics

and remains of many famous and grand saints on my head, when I also was praying in my heart." On the 15th December, 1883, the Lama reached Darjeeling where the first news he received was the sudden death of the chief Lama at Pemionchi almost immediately after he had left it. Thus ends one of the best records of Tibetan travel that has yet been achieved by any agent of the Survey of India.

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*Original Narrative Account by Rinzin Nimgyl of his exploration of the country to the North and North-West of Kinchinjunga made in the autumn of 1884, with Notes by COLONEL H. C. B. TANNER, and MR. W. ROBERT, Survey of India.*

Having received orders from Colonel H. C. B. Tanner, Deputy Superintendent, Survey of India, in charge Darjeeling and Nepāl Survey parties, to observe Tibet and Bhutān Peaks and obtain the topography of tracts adjoining Sikkim, I left Darjeeling on the 2nd October 1884, and marching for 12 miles we reached Jorpokhri, a Travellers' Bungalow, where a heavy shower of rain kept us in great trouble during the night. Next day before dawn we resumed our journey, and proceeding 11 miles from the last stage, we halted at Tongbe, a Travellers' Bungalow.

On the 4th we stopped at Sandakphu Travellers' Bungalow, 15 miles distant; here a heavy fall of rain detained us for two days. At Sandakphu N. S., I observed some snowy peaks in Nepāl. On the 5th we reached the Travellers' Bungalow at Phalut, and having found the Survey Station of the same name, I observed some more snowy peaks in Nepāl on the 6th.\*

The 7th October brought us to Singali Thang.† To-day we met several ascents and descents and crossed two footpaths, one which branched off to Tablang Dzong‡ or Khallanga fort, *viâ* Mia Khola Valley and another from Singalila pass to Mai Khola River. Grass was abundant, and water can be had from a small spring which could supply 30 men. A stone pillar marking the boundary between Sikkim and Nepāl was found in the encamping-ground. A footpath to the east runs to Pemionchi monastery *viâ* Hi village in Sikkim and on to the sulphur springs of Ralong Sachu resorted to by the Nepālese for its medicinal properties. On the 8th, still keeping northern direction and working up the ridge, we passed a hollow on the crest filled with rain water. From about here a footpath goes to Nepāl territory. Descending 3 miles along the ridge we passed a small oblong lake, some 30 × 100 feet, which supplies water to cattle belonging to the residents of Sikkim brought here in summer for pasturage. Continuing our journey for half a mile along crest of ridge we stopped for the night. To-day we saw along our route a number of *munal* and blood pheasants.

A most interesting trip may be made from Darjeeling to Sandakphu and Phalut and then along the Singalila range to Chia Bhanjan here described by Rinzin Nimgyl. From Chia Bhanjan a fair road leads to Pemionchi through rather a pretty valley. Tassiding and Ralong monasteries may also be visited. The return march to Darjeeling would pass over some very interesting country.

On the 9th October 1884 Megutak cave was reached. It gives shelter to traders and travellers during the rainy season. About this cave was a small tolerably level plain on which some 20 tents can be pitched side by side. From Singali Thang to Megutak cave water is procurable by one who has a knowledge of the route.

On the 10th, marching along the Nepāl-Sikkim boundary and fording a stream flowing

\* The Yampung plateau seen from the Lampheram Peak on the boundary watershed of Sikkim and Nepāl forms a magnificent middle distance to the great mass of Kinchinjunga situated but a comparatively short distance behind it. Jummoo stands apart to the left and the dark mass of Kangla visited by Rinzin Nimgyl stands out boldly from the snow slopes of that fine mountain.

Below Kabru are smooth snow fields pierced here and there by great splinters of black rock. The early morning sun shines astant on the landscape, and lights up the higher points most brilliantly whilst the depressions are still cold and gloomy. The summit of Lampheram, which forms the near foreground, is covered with many coloured vegetation broken here and there by grey masses of boldly-shaped rocks. The slopes of Lampheram are clothed with an almost impenetrable mass of rhododendron.

† The ridge on which Rinzin Nimgyl travelled up to this point and for some distance beyond was surveyed under the greatest difficulties by Mr. Robert some three seasons previous to Rinzin Nimgyl's visit. Mr. Robert's knowledge of North Sikkim is second to none. He has revised part of this account by Rinzin Nimgyl.

‡ Pemionchi monastery acknowledges its subordination to the great Lama of Sakia and not to the grand Lama of Lhūsa.

east to west, we saw a straight but narrow footpath which runs to Yampung\*. Not ascending this we adopted a circuitous but wide road, and continuing our progress for a mile, we saw a small stream on the left flowing south called by the name of Mai Khola River, or Changthap. Ascending for a mile we reached Yampungla pass, and thence descending for 4 miles we arrived at Yampung cattle-shed of five *pakka* houses, built by the inhabitants of Sikkim, who during the summer season bring their *yaks*, some 200 in number, for pasturage.† Round the village some dwarf trees are found, but half a mile to south-east pine trees grow from 40 to 60 feet in height. This village is connected by a road from Pemionchi Monastery‡ *viâ* Rungbi valley and Talot village. This monastery is situated on a conical-shaped hill, where some 130 *Dapas* (priests) reside. It is the head monastery in Sikkim,

and its supremacy is acknowledged by other *Dapas* who have to observe certain rules of celibacy, and to break them will cause their exclusion from the monastery. In case of a vacancy of head ruler occurring in any other monastery, a *Dapa* under the title of Lama is sent from this to fill it up.

On the 11th, we walked over snow, and proceeding 2 miles onward we visited two lakes under spurs, each about 300 feet in circumference. After a difficult ascent of  $1\frac{1}{2}$  miles we reached Dhoila Pass, which traders have marked with a heap of stones to mark the route. I cannot explain the amount of trouble we had to undergo here. No sooner had we reached the pass than clouds spread over and snow began to fall. In darkness, although almost unable to trace our way, we still continued for half a mile along the ridge, and presently we found a stream, whence we all determined to slip down along the right bank of this stream into the valley below where we expected to find some fuel to warm ourselves. At last the whole party, except two of my companions who could not move, being much affected by snow, slid down and fortunately reached a knoll about 9 p.m., where we passed a most horrible night without fire and food. Next morning we succeeded in getting down those two companions left behind. We returned our thanks to God for saving our lives, because had we not stopped here and had we continued our slide for another 200 feet, we should all have been precipitated into a *khad* below.

On the 12th, leaving the stream to the left, we descended abruptly by a winding path in the Kurmothāng valley and rested for two hours in a cattle-shed on the right bank of the Kurmothāng Chu. After taking our meal we crossed the river by a wooden bridge, 20 feet long, and proceeded up to "Boktob" of three cattle-sheds. It is situated on the slope of a spur and at the junction of two footpaths, one to the east leads to Jongri, a *pakka* cattle-shed in Sikkim, and the other to Tseram village in Nepāl. There is a scarcity of grass and fuel. This place is much frequented by traders of Khangbachen village who go farther east to exchange salt for *tsod*, a kind of creeper which yields a red colour.

The Kurmothāng valley contains an extensive grassy plain, 300 feet broad and 700 feet long, surrounded by (*Dungshing*) § pine and rhododendron trees and watered by the Kurmothāng-Chu, which takes its rise from Tshodomdong lake and flows to the south.

Next day, following the second footpath over snow for 2 miles we visited two lakes, the larger of which is named Tshodomdong, so called as its water bears a resemblance to the green colour of peacock's feathers. It is about 200 feet in circumference, and its water looks from a distance of a dark-green colour. This lake is an object of great veneration to the inhabitants of surrounding countries.

These two lakes receive their supplies of water from Kāngla || snowy peak.

The next day, after a difficult ascent of a mile, we reached the Chumbab Kang Pass, where a fall of snow detained us for four nights. On the 16th I surveyed with plane table at the pass and fixed some snowy peaks.

On the 17th we crossed the "Chumbab Kang" range, which runs in a direction of north and south. This pass is said to form the boundary between Nepāl and Sikkim. A precipitous descent of a mile brought us to a stream which we forded; this stream rises from the Kāngla Snowy Peak. Hence the road becomes comparatively level and turns to the west. Half a mile further we crossed another stream which issues from a lake and flows to the south. We noticed *en route* some dwarf trees on the slopes of spurs about a mile to south of the road. Some 2 miles onward we arrived at Choolung Kyak, a cave wide enough to give shelter to some 15 persons. Here we rested for the night; water, grass, and fuel were procurable.

The next day, after an ascent of 3 miles, we crossed a pass over a ridge covered with snow, then descending for 2 miles we crossed a river by a wooden bridge 30 feet long. Following the right bank of the river for 3 miles we reached Sema-ram, a cattle-shed. This river is said to take its rise from the Kanglonangma pass, and receiving several tributaries from the west empties itself into another river called Yalung, which comes from the Kinchinjunga Snowy Peak.

On the 19th, progressing 3 miles, we crossed the Yalung River by a wooden bridge about 50 feet long, and thence ascending for 300 feet we reached Tseram village, which is situated in a grassy level plain terminating on the north-west side by a ridge. It contains some 5 *pakka* houses. The inhabitants keep about 150 *yaks*, which are used as beasts of burden. The tract abounds with game; for instance *musk-deer*, *serapius* and *muntjac*. We here replenished our stock of provisions which had run short. The village lies at the junction of four roads, one runs along

the right bank of the Yalung river *viâ* Ta-oong village to Taplang Dzong (fort) ; the second runs north-west to Gunsä village, third to Upper Yalung, and the fourth is the one we came by. Here a tax-gatherer is left by the Ruler of Yalung to raise taxes, one rupee per head, from traders, and we were also obliged to pay Rs. 15 at the same rate. Here we engaged two guides to show us our road.

Next day, we started for the Yalung Kang Snowy Peak, and ascending along the left bank of the Yalung River we visited the Upper Yalung village, the summer resort of the inhabitants of the Lower Yalung. This village contains

\* Called *Chutens* by some.

some 40 *pakka* houses and *churtans*,\* small temples, marked with flags. We were astonished to find all the houses locked up, but on inquiry it appeared that all the inhabitants had temporarily left their houses which contained all their goods. On

† Visited by Hooker.

the right bank of the river we saw a monastery named Tashi Chading† in a dilapidated condition. It is said that for the past 11 years this monastery has been deserted and a new one was built at the Lower Yalung instead. A market is held here during summer, and traders from different parts of the country come to exchange their articles. From this place glaciers are visible, and they cover the head of the river. Cows and bullocks are held sacred; they are never used as beasts of burden and any person infringing this custom undergoes a severe punishment.

Marching for 3 miles from the village we visited a large cave under a rock used as a retreat by a Lama who devoted his life to holy worship. Proceeding for 3 miles we were detained by a fall of snow for three nights. On the 23rd morning, after an abrupt ascent of 2 miles over snow, we reached Yalung Kang Snowy Peak, about 19,000 feet high. Here peaks were observed and the country surveyed. On the 24th we returned to Tseram village, and thence proceeded to Phukpa-Karmu *viâ* Semaram and Tongak Kang. Phukpa-Karmu is a large cave, which gives shelter to passengers and traders against snow and wind. Next day, with great difficulty, by aid of ropes we climbed over Kängla Snowy Peak, whence I observed some snowy peaks, and we returned to the same cave. About a mile to the east of the cave is the Kängla Nangma pass, whence a road runs to Sikkim *viâ* Jongri. On the road between Phukpa-

‡ Teggyapla.

Karmu and Jongri is a cave called Tiwogyaplag,‡ a halting-place for passengers. Six miles to the west of Phukpa-Karmu and between two ridges there is a lake about a mile in circumference with other small pools to the north of it, which from a distance seem to contain water of different colours. From this lake a stream flows to the south and joins the Semaram river. On our way to take observations to the west of Phukpa-Karmu we stopped for a night on a grassy slope, some 200 feet north of the lake. During the night snow continued falling so that our tent bent with its weight, and we were suddenly awakened, and with great difficulty got out of the tent and started at once without food for Tseram.

On the 2nd November we left Tseram village, and ascending 3 miles we crossed a pass, and thence slightly descending for  $2\frac{1}{2}$  miles we reached the junction road which runs to Tablang (Taplang) fort *viâ* Yalung village. This is the road which is adopted by the Bhotia traders who trade in salt and rice carried by sheep in hundreds. Marching 3 miles further we rested for a night. Next day after 7 miles journey we arrived at Gunsä village.

Gunsä is a large village situated in an open and flat valley enclosed on all sides by snowy mountains, which rise in precipices to a stupendous height. It contains 150 stone and wooden houses, and some of them are two-storeyed. The Khangbachen river emanates from the Jongsong pass to the north, and dividing the village from a *Gom-pa* or monastery, surrounded by some 40 *pakka* houses belonging to *Dabas* (priests), it flows through a narrow valley from the south of the village and joins the Yalung river. This stream is bridged over in a number of places with timber to facilitate communication between the village and *Gom-pa*. Here we found some patches of cultivation; the chief production of the soil is wheat, potatoes, barley, and *phaper*, a kind of grain, and other vegetables. The inhabitants are well-to-do people, generally engaged in trading business. Women here spend their time in weaving blankets. Men and women in the village every night go from one family to another to interchange visits, when they are treated with courtesy and presented with cups of *nowa* (a kind of liquor) and fruits, &c. Thus they pass their nights in song and dance. In case of a death occurring in the village their jolliness is stopped for three days. They observe Tibetan customs. They keep *yaks* and goats and sheep. They are ruled by a headman, whose duty is to collect revenue and taxes. The village lands are fenced round to protect them against musk-deer and *burrel* (Nao) and *munäl*, which the villagers are forbidden to shoot. The *Gom-pa* (monastery), being the repository of religious books and images, is governed by a Lama, whose supremacy is acknowledged by the villagers who monthly send food for him and his disciples (*Dabas*). We passed five nights here.

On the 7th, having crossed the Khangbachen river and ascended for 7 miles, we reached



Nanghola pass, whence we saw, 7 miles to the west down in a valley, a small city called Walloong Zom on the junction of roads, and between two rivers, the Yongma and the Walloong. It contains some 300 houses and a row of shops on either side of a road running through the town. Next day we retraced our steps to Gunsa.

On the 9th, proceeding 7 miles along the right bank of the Khangbachen River, which is fed by several small streams from the right and left, we crossed the river to the left by a wooden bridge, and following up the left bank for  $2\frac{1}{2}$  miles we reached the Khangbachen village, the summer location of the inhabitants of the Gunsa. The village at the junction of two rivers called the Thonak, and the Thongchen containing *pakka* houses, was found empty on account of the cold season, and was surrounded by barley fields. To the east and opposite the village the Janu (or Junnoo) Snowy Peak is visible, which is an object of worship by the inhabitants of Gunsa. There is a scarcity of firewood and grass. Here a companion of our's fell ill, and from this place he had to be carried.

The Jonsong Pass, which is about 2 miles south-east of the junction of the boundary of

\* The route described by Rinzin Nimgyal was some years previously followed by Babu Sarat Chandra Das, and the Lama Ugyen Gyatso. At that time the Lama was ignorant of surveying, and besides, the journey was made under most trying circumstances when snow fell daily, so that even had he known how to take them, observations could hardly have been made. The route, however, was plotted and the map published, but the errors of the Lama's distances and angles were sufficient to throw the position of the Jonsong and Chhorten Nyima Passes many miles to the west. The Lama has crossed and measured the height of over 90 passes, and he informs me that he thinks the Jonsong is the highest and most difficult he ever attempted. In the first edition of the sketch map of North Sikkim by Mr. Robert the name Jonsong has been placed opposite a wrong pass from erroneous information supplied to that gentleman by his guides. A second edition of this sketch map will contain a number of corrections and all the new geography to the north-west of Kinchinjunga by Rinzin Nimgyal

Nepāl, Tibet, and Sikkim is a continuation of the Kinchinjunga range, and is about 20,000 feet in height. Continuing on a northerly course from Gunsa we came to Khangbachen, 9 miles; then going on for 7 miles we came to Lanok, a cattle-shed, where a road diverges *viâ* the Chabukla Pass to Tinkijong. From Lanok we proceeded up the river crossing 5 miles of a moraine and 4 miles of a glacier, reaching the Jonsong Pass on the 7th day from Gunsa. This pass cannot be crossed unless assisted by some 15 men in making a passage over snow. The nearest pass to the west is Chabukla, about 19,000 feet, and to the north Chhorten Nyima, which we afterwards visited; to the south the range cannot be crossed.\*

Resuming our journey to the east by an abrupt descent of a mile, and proceeding for some miles over a moraine, we arrived at Chizin Lhe, a cattle-shed. Thence we turned to the north and reached the Chhorten Nyima Pass which is on the boundary between Tibet and Sikkim. Along the right bank of the stream which rises from the pass a route runs to Longijong fort. After a day's journey it crosses the Chichu River which issues from Nuijin Songra†

† Nuijin Songra peak was fixed by Rinzin Nimgyal during the operations he is here describing; it was seen by Hooker, Harman, and Robert from the Dongkya Pass, but not fixed. It is an important geographical point being seen from a wide extent of country, its height is not quite 23,000 feet.

‡ Chomotel-tung partly surveyed by Lama Ugyen Gyatso and partly by explorer Hari Ram.

to Chizin, a cattle-shed, and thence resuming our journey to the east along the left bank of Zemu River we reached Shonak (flat), a cattle-shed. Our stock of provisions had run short, and we were obliged to live on game. Some 2 miles from Chizin, the cattle-shed, we saw the foot-prints of a wild *yak*. We traced the marks for 4 miles when we came across two wild *yaks*, and tried to catch them alive, but they escaped. Our two companions who fell ill died at Shonak (flat). Marching for four days without food we arrived at Zemasamdong at the junction of Lachen and Zemu Rivers, where we replenished our stock of provisions which had run short.

Leaving Zemasamdong cattle-shed on the 5th December 1884, and marching for 4 miles to the south we reached the Lachen or Lomting village. This village is situated on the small table-land on the west of the Lachen River. It contains some 110 *pakka* houses and a small monastery to the north. The villagers are well-to-do people, and their trade consists in carrying canes and beams, planks, &c., to Tibet. They possess numbers of *yak*, sheep, and goats, utilising the milk of all their animals very largely in their food. The women are generally engaged weaving blankets of various kinds, which are sold in Sikkim. Besides blankets they take to Sikkim for sale salt, earthen pots, musk, &c. We stopped here four days.

Having taken leave of the Snowy Range we came to Darjeeling *viâ* Cheungtung and Tumlong on the 31st January 1885.

*Narrative Account of Rinzin Nimgyal's Explorations in Sikkim, Bhutān and Tibet, in 1885-86, by Mr. G. W. E. Atkinson.*

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[Explorations in Sikkim, Bhutān and Tibet by Rinzin Nimgyal, 1885-86. This account was compiled by Mr. G. W. E. Atkinson, from information verbally communicated to him by the explorer Rinzin Nimgyal from the vernacular notes made in the course of his travels. The chief object of this exploration on which Rinzin Nimgyal was sent was the settlement of the long standing doubt as to whether the Tsang-po formed the head waters of the Brahmaputra or of the Irrawaddy. Unfortunately owing to tribal and political complications he failed in this, having made two unsuccessful attempts to penetrate through Bhutān from west to east. His route closed on those of previous explorers, *viz.*, Captain Pemberton (1838), and Lama Ugyen Gyatso (1883) in two places—1st at Biāka Dzong and 2nd at Se Shangkar in Tibet—the disagreement being only 5 miles in the first case and 7 in the second. His materials have afforded the means for supplying a long existing desideratum, *viz.*, a good sketch map of Bhutān. This map, Sheet No. 7 of the N. E. Trans-Frontier Series, was compiled in the Survey of India Office at Dehra Dūn by Mr. G. W. E. Atkinson on the basis of all existing information, and is abundant evidence of the excellence of the work of this explorer.]

Having received instructions in August, 1885, from Colonel C. T. Haig, R.E., Deputy Surveyor General, through Colonel Tanner, to start from Darjeeling and cross into Tibet by the Dza-lep (Jelep La) pass, and thence to travel south of Chum-bi in an easterly direction into Bhutān, to Tawang, and on to the great Tsang-po river of Tibet, and there to follow its course downwards, with the object of settling the vexed question as to whether that river is one with the Brahmaputra or Irrawaddy, I started from Darjeeling on the 1st November, 1885; But as the people near the Dza-lep pass were likely to recognise me and detect my motive for crossing into Tibet, I detached my companion Phurba, a native of Sikkim whom I had instructed in the use of the prismatic compass, with orders to cross the Dza-lep pass into Tibet and then to cross over into the Hā Chu valley by the Miru La (pass) and to meet me at the junction of the Hā Chu and the Wong Chu, two well known streams in Bhutān.

2. Leaving Darjeeling on the 1st of November, accompanied by three trustworthy companions, five permanent servants—all natives of Sikkim, and several coolies engaged for the conveyance of our baggage and loads, I crossed the Great Ranjit river, here about 1,050 feet above the sea level, by ferry, and arrived at the small village of Kietam at about 5 p.m.

3. Starting the next morning, our route lay through cultivated fields and up an ascent to the monastery of Namchi, and thence onwards to the halting place of Donyer, distant about 11 miles from Kietam, where we stopped for the night.

4. Resuming our journey the next morning, the 3rd, we travelled along the Tendong ridge for several miles through a dense forest and then descended to the village of Temi, where we halted.

5. On the 4th, by an easy descent we reached the small village of Turko, and here we stopped that night. The height of this place is 3,000 feet, and evidently favorable to the growth of the orange tree, which we noticed here.

6. We resumed our journey early next morning and after crossing the Ringphi Chu and the Rāngpho Chu, two small streams which fall into the Tista river, we ascended to the village of Mūbūmthāng overlooking the Tista. This is a small village of about 10 houses, inhabited chiefly by Nepālese. The valley of the Tista in this locality is unhealthy, fever prevailing after the rains. About 1½ miles beyond Mūbūmthāng is a place called Namphāk, where a temporary rest-house has been erected (known as *donkhim*) for officials of the Government, and at this spot we passed the night.

7. The day following we left Namphāk, and after a series of ascents and descents, reached the small village of Kasair. During this march we observed orange trees flourishing in large numbers both in a wild state as well as cultivated, the fruit of which is carried by the villagers as far as Darjeeling and sold there. Three streams were crossed on this march, none of which merits any special mention. The latter remark applies equally to two spurs from the Moimam rock which we crossed *en route*.

8. On the morning of the 7th we started from Kasair and after marching about 5 miles, easy going, reached a small stream which falls into the Tista, where we were compelled to stop about 3 hours, owing to the swollen state of the stream from recent rain. So soon as the

state of the stream permitted, we crossed over and remained for the night at Samdong village, whose height is 1,500 feet. Leaving Samdong the next morning and crossing the Tista by a cane suspension bridge about 400 feet in length and raised some 50 feet above the surface of the stream, we toiled up a stiff ascent to the small village of Yeungthang and there we stayed that night.

9. During my stay here I learnt from some travellers that a guard of Tibetans was posted at the Cho pass—the same by which I had intended to cross over into Tibet—with orders to bar the progress of travellers. On hearing this my plans had to be altered and I was compelled to adopt another route to the south-east, and leaving Yeungthang the following morning, the 9th, we marched for about 10 miles and arrived at the fair-sized village named Tumun, whose height I ascertained to be 4,900 feet.

10. On the day following we left, and ascending a steep spur covered with heavy forest reached the summit of the Phobam La pass, elevated 6,680 feet above the sea. From this pass I observed the bearings of some trigonometrically fixed peaks, and after a short interval we began a very disagreeable descent through heavy forest to the village of Reh, and thence onwards to the right bank of the Rongni Chu, where we halted for the night.

11. On the 11th we followed the course of the Rongni Chu, crossing and re-crossing it several times, till we reached the bridge over the Taksam Chu, distant about 400 paces above the junction of the streams. We proceeded thence to the small village of Pakyong, elevated 4,400 feet. A road leads from the bridge above mentioned to the new palace of the Sikkim Rāja, now known as the Gang-tok palace.

12. The day following we resumed our journey, ascending to the ridge above Pakyong, elevated 4,500 feet, where we observed some *churtan* or small temples. From the ridge we descended to the village of Dikeling, where we were obliged to stay the whole of the next day owing to heavy rain. Early in the morning of the 14th we left Dikeling and descended for about 6 miles to the junction of the Roro Chu and the Rungpo Chu streams and then followed up the latter for about 1 mile, as far as the bridge—height 1,800 feet—which we crossed and there halted for the rest of the day and that night. About 1 mile from the junction of the streams named above and situated on the bank of the Roro Chu, copper mines are said to be pretty extensively worked. The bridge crossed on this day's march is about 70 feet long, formed of bamboos, and raised about 50 feet from the surface of the stream.

13. On the 15th we ascended to the top of a spur by a series of zigzags and then by an easy descent reached the *bazār* of Chongthāpa—height 2,900 feet—where a fair is held every Sunday. We halted here on the day following to replenish our stock of provisions, and on the 17th we started for the Rhenok ridge, crossing which, we descended to the Rongli Chu where we passed the night. The height of the Rhenok pass is 5,020 feet and that of the Rongli Chu bridge 2,450.

14. Passing over the wooden bridge across the Rongli Chu on the morning of the 18th, we ascended a spur for several miles, and then turning to the east descended to Lingtamtho village, and then again by an ascent reached the small village of Koi where we halted.

15. It was now my intention to have crossed over into Tibet if possible by the Dza-lep pass even at the risk of recognition, but here again I learnt that this pass, like that of Cho pass was also guarded by the Tibetans to prevent the passage of travellers. Hopes however were entertained by some traders who had reached Koi that the Dza-lep pass would soon be opened, and on this hope we lingered on at the village for as many as 12 days.

16. Seeing at last that we were losing time in the apparently vain hope of crossing this pass, we left Koi on the morning of the 1st December and after travelling about 8 miles up and down spurs, we encamped at night-fall below the Pango La ridge, in a dense forest.

17. On the day following we resumed our journey and ascended to the Pango La (pass), height 9000 feet. As this pass is on the boundary between Sikkim and Bhutān, I deemed it advisable to start my regular route-survey from the Pangola peak situated about 3 miles south of the pass and elevated 9,950 feet above sea level. To this end, leaving all our loads and baggage carriers at the pass, I, accompanied by only a few assistants, ascended to the summit of the peak and thence took bearings to several trigonometrical peaks and other unfixed peaks. Since from this point my route-survey was to have its origin, I counted the paces from it back to the pass and thence following an easterly direction by a very steep and nasty descent reached the Di Chu river at a point whose height I ascertained to be 4,600 feet. From the pass to this point is a distance of about 7 miles and the entire march was made through dense forest infested with tigers and bears. We crossed the Di Chu, here spanned by a wooden bridge about 100 feet long, and then ascended for about 1 mile to the village of A-sam where we stopped for the night. The breadth of the valley where we crossed the Di Chu is about 100 feet, the banks of

the stream sloping down to the water, which has a rocky bed. The stream is boisterous in its flow. It rises to the north at the Bidang Cho (lake) and pursuing a southerly course, falls into the Tista in the plains, after receiving the tribute of numerous streams. The upper portion of the Di Chu valley is covered with dense forest, giving shelter to all kinds of large game. The inhabitants in this part are not numerous and cultivation is carried on only to a small extent.

18. Leaving A-sam village on the morning of the 3rd, we gained by a stiff ascent the summit of the Song La (pass), height 7,400 feet, and distant about 6 miles, from whence a road leads to the Doka La (pass) west of the Gyi-mo-chi peak. This road after leaving the Doka La leads on to Chum-bi in Tibet. From the Song La we followed an easterly direction and after about 7 miles travelling down very dangerous slopes we reached the village of Assam-dokyul, height 5,150 feet, containing 6 houses with a mixed population of Tibetans and Bhutānese, who are cultivators as well as trading herdsman. Butter and a scandent plant called *chud* are the principal articles taken from hence into Tibet and bartered for salt, blankets, &c. I may here mention that the plant *chud* is found growing wild in these parts entwined round the trunks of trees and is a most important article of trade. The people gather it in the jungles, cut it up into small pieces, and carry it away into Tibet, where a rich red dye is extracted from it, when dry. This dye is in great demand throughout Tibet.

19. On the morning of the 4th December we left Assam-dokyul and after journeying about  $\frac{1}{2}$  a mile, we reached the Song Chu (stream), which lower down falls into the Di Chu, and crossed it by a wooden bridge 70 feet long and height 4,800 feet. Continuing our journey after crossing the bridge we reached the Sa La (pass), distant about 7 miles and elevated 6,600 feet. The pass is situated on a spur of the Gyi-mo-chi ridge and a road leads thence over another pass south-east of Gyi-mo-chi peak into Tibet.

20. Starting again from the Sa La in a southerly direction we descended for about 7 miles and arrived at night fall at Bindu-kha village consisting of about 20 houses located together and 10 houses scattered about, with a monastery built on an isolated rock. It is situated in undisputed Bhutān territory and is under the rule of the Jongsa Dzong. The ruling custom in Bhutān of all the people shaving the hair of the head of both sexes, is adopted by the people of this village, and the sexes are distinguished only by their attire.

21. We remained at Bindu-kha village on the 5th in consequence of rain and took advantage of our stay to replenish our stock of provisions. On the 6th we left, and descending for about 3 miles reached the Bue Chu (stream), height 4,060 feet, and crossing it by a wooden bridge 80 feet long, we ascended through a thick forest to the cattle-shed of Athang, and passing which continued our ascent to the cattle-shed of Bākling, elevated 5,680 feet, where we stopped that night. From the bridge to Athang is about 3 miles and from Athang to Bākling another 5 miles further. The latter is a place of some importance, for hundreds of head of cattle are kept here, and a brisk trade in butter is carried on with Pāro. The cattle are of good breed and large size and many purchasers find their way to Bākling.

22. We left Bākling on the 7th, and journeyed through a dense forest over a stiff ascent for about 7 miles, and struck the road leading from Sipchhu to the Tūle La (pass), and following this road came to the Longchok cave after about 1 mile, where we stayed that night. This road is frequented by robbers who always avail themselves of their numerical superiority whenever this advantage is afforded them. The Longchok cave is situated on the top of a spur from the Tūle La ridge, and owing to the proximity of water, travellers invariably seek its shelter before crossing the pass. The spot is surrounded by dense forest of magnificent growth and is elevated 8,680 feet above sea level.

23. Leaving the cave on the morning of the 8th, we marched along the spur for about 6 miles, and reached the Guachhan pass, height 9,950 feet, from whence we journeyed over a pretty level path for another 2 miles and then gained the Tūle La (known also as the Tug La) whose height is the same as that of Guachhan. The Tūle La is on the same ridge as that on which are situated the passes of Cho La, Dza-lep and Gyi-mo-chi. Game abounds in this locality and I observed the rhododendron and a species of bamboo growing in great luxuriance. From the Tūle La we proceeded in a southerly direction for about 2 miles along the ridge, and then turning to the east descended for about 7 miles over a very precipitous path to the cattle-shed of Baklia, height 6,600 feet, which we found in a dilapidated state, and there we encamped that night.

24. Proceeding on the following morning for about  $3\frac{1}{2}$  miles by an easy descent, we arrived at the Ba Chu (stream) and thence by a comparatively level path, reached the right bank of the Ammo Chu (river) which was here spanned by a cane bridge, height 3,600 feet, and length 150 feet. The Ammo river is so designated from being the largest in this part and hence spoken of as the mother of all its tributaries; *am* signifying mother. This river rises in the southern slopes of Chumalhari peak and of the ridge on which is situated the Thanka La (pass).

and flowing south by Chum-bi, Rin-chen-gang and A-samthang village, continues its course till it empties itself in the Tista river in the plains. The valley of the Ammo river where I crossed it is about  $\frac{1}{2}$  mile wide, but I was given to understand that nowhere else is the valley so wide as at this spot. The shao stag, musk-deer, wild sheep or burrel, goat, monal pheasant and other game abound in the upper regions of this valley, while in its southern or lower portion, the elephant, tiger, bear, wild pig, and thar equally abound, and often prove destructive to the cultivation, for the villagers are apathetic and care not to destroy the game. Crossing the cane bridge we marched along the left bank of the river for about 4 miles till we reached the Dül Chu (stream) which flows from the north and after several fine waterfalls varying in height from 50 to 100 feet, enters at last the Ammo river, about  $\frac{1}{2}$  mile below. The height where I crossed this stream by a wooden bridge is 3,190 feet.

25. Leaving the bridge over the Dül Chu behind, we proceeded for about 5 miles over continuous steep ascents till we reached Sangbe Dzong, a place of some little importance, whose height was found to be 6,150 feet. Sangbe Dzong is on a spur of the same range on which the Miru La (pass) is situated. The fort was destroyed about a year ago during a quarrel between the Jongpens of Western Bhutan and the place has been deserted by the former inhabitants, though the adjacent lands are said to be very productive in grain crops, when tilled. On our arrival at this place, the headman who was left in charge by the Jongpen summoned us into his presence and questioned us as to where we had come from and where we were going. I explained that we had come from Sikkim and were going to Pärö Tükchang on a pilgrimage, and on making him presents of cloth and some money, he consented to our proceeding, but warned us that the country was in a disturbed state and that we incurred some risk in going there. From Bindu-kha, where we were on the 4th and 5th, to this place our route lay through forest and waste, and no village, nor cultivation did we see since leaving that place, until we arrived at Sangbe Dzong. Fearing detention at Sangbe Dzong, in spite of the favorable bearing of the headman towards us, we moved out of the place and passing a large and long *mendong* (temple) at 200 yards distant proceeded for about 2 miles more till we reached the small village of Giera, height 6,030 feet, and here we stayed for the night. The valley of the Ammo river lay stretched before us to the south, till lost in the distance.

26. On the 10th we started in a north-easterly direction over a very precipitous path and after travelling about 3 miles reached the Sum Chu (stream) which rises at the foot of the Tegong La range, and falls into the Ammo river. The banks of the Sum Chu are rocky and precipitous. We crossed the Sum Chu by a wooden bridge 60 feet long, height 3,750 feet, and ascended a steep spur for about 4 miles and then proceeding on a pretty level way for about 1 mile more, we began a descent to the large village of Shebi which was reached after marching about 2 miles. Total length of this march was about 10 miles. Shebi, height 5,500 feet, is situated above the right bank of the She Chu (stream) in a flat, open spot where cultivation is carried on pretty extensively. On this day's march we passed a monastery above our route, distant 300 paces from it, whose height I found to be 5,700 feet.

27. On the morning of the 11th we left Shebi and descending for about 1 mile, reached the river which is here crossed by a wooden bridge 60 feet long and height 4,400 feet. This stream rises at the foot of the Tegong La and falls into the Ammo river about 2 miles lower down. Crossing the bridge and proceeding in a northerly direction, we ascended a spur, until we arrived at Doring cattle-shed, some 7 miles distant from the shed, and owing to the stiff ascent in this day's march, we halted here for the night. The next morning we continued our ascent and after about 1 mile marching, reached the line of snow. Proceeding on for about 3 miles more, we struck the road leading from the south to the pass—by which the people of the southern portion of the Ammo Chu valley generally travel—and continued our journey for another 3 miles through snow, to the rest-house (*donkhim*) called Tegong, height 11,650 feet. It was not our intention originally to have stopped here for the night, and we had already proceeded about 400 paces, after refreshing ourselves, when we met three travellers coming from the Tegong La who represented the difficulties in the route and the total absence of any place to rest in, beyond the pass. They persuaded us to return to the Tegong rest-house and to pass the night there, doubtless with the evil intention of robbing us if they could get the opportunity. Throughout this night in consequence of our suspicions, we kept awake, but the night passed without any untoward event. Some three feet of snow lay on the ground and snow fell also during the night, and combined with the high wind that blew, the morning of the 13th broke altogether chill and dull on us, compelling us to stay at the rest-house till the inclement weather had passed.

28. On the morning of the 14th we left the rest-house and travelling in an easterly direction for about 5 miles, we gained the Tegong La, height 12,000 feet above sea level and about 350 feet higher than the place we had left behind. This pass is on the same ridge as the Chumalhari and Ma-song-chong-drong-ri peaks and the passes of Pempa and Miru.

The ridge runs from hence in a south-easterly direction and terminates to the east of Buxa Duār, forming the watershed between the Ammo Chu and Wong Chu (rivers), known on our maps as the Tursa and Mingaon. The dwarf rhododendron is almost the only tree I observed on the ridge, while the *Abies Webbiana* (the silver fir) occupies the ground on both sides, and attains to great age and dimensions, some that I noticed being about 30 feet in girth and of magnificent appearance. A splendid view of the surrounding peaks is obtained from the pass, but clouds prevented me from availing myself to the fullest extent of the advantages revealed, and then so soon obscured.

29. Leaving the pass behind we descended to the Tegong Chu, which we followed, crossing and re-crossing it several times till we reached, after about 8 miles marching, the bank of the Ha Chu, height 8,670 feet. This stream which rises in the southern slopes of the Ma-song-chong-drong-ri peak, takes its name from the caste or tribe of men who inhabit this part of Bhutān. The Ha Chu valley is broad and open and roads run its whole length on either side of the stream. Its width lessens as you travel down its course southwards. It is thickly populated, but owing to the extreme cold of winter the inhabitants resort to a warmer clime in the south, carrying with them all their cattle. It rises as stated above, flows past Tumphiong Dzong and enters the Wong Chu many miles lower down. Grass is abundant in this valley. Crossing the wooden bridge 100 feet long over the Langbo Chu (stream) we followed the right bank of the Ha Chu up its course for about 3 miles and arrived at Pudung village on the same bank, and here we stayed for that night. The village is 8,700 feet in elevation and contains 10 houses. North of the village and distant  $\frac{1}{4}$  mile stands a monastery. At the time of my arrival all the inhabitants were away in the south with their cattle. Tumphiong Dzong is about 7 miles distant from here, up the Ha Chu. One road from this village leads over the Chu La (pass) and a second is said to go to Tumphiong and over the Miru La to Rin-chen-gang. The whole valley of the Ha Chu is under the immediate control of the Tumphiong and Batte Dzong Jongpens, petty rulers, who in their turn are subject to the Pāro chief.

30. On the 15th, we crossed the Ha Chu by a wooden bridge, height 8,700 feet, and pursuing an easterly direction over a spur reached the almost deserted village of Piadongkha of 9 houses, height 9,350 feet. Rice was not obtainable here, and the few inhabitants who were left behind seemed to be of the very worst type of character. Game abounds in this locality and a road leads to Pāro over the Sang La (pass). The length of our march this day was about 8 miles. The *pinus excelsa* thrives here in great numbers, its timber being employed in building houses and bridges and is also employed to afford light in the dwellings by chipping the wood and lighting the pieces.

31. Leaving the village on the morning of the 16th, and taking an easterly direction we travelled to the Batte Chu, a distance of about 7 miles and thence a further distance of about 3 miles brought us to Batte Dzong, where we experienced great annoyance from the Jongpen, who was bent on forwarding us on to Pāro, in spite of our many entreaties. After 3 days' detention here and only after making presents of cloth and money did the Jongpen permit us to quit the place. The fort of Batte is perched on the summit of an almost inaccessible rock, as indeed are most of the forts I noticed in Bhutān. The height of the fort is 8,850 feet. A road leads from here across the Ha Chu and thence over the Shaugia La (pass) to Buxa Duār.

32. We left Batte Dzong on the morning of the 20th, and travelled in an easterly direction for about 6 miles and reached Chebi village, height 8,680 feet, containing 10 houses and a monastery. The houses here are nearly all built of stone and are as a rule long and large enough to afford accommodation to several families. Cereals are not extensively cultivated here, but the people devote much time to raising vegetables and look after the fruit trees which are numerous. The hill tops are generally bare, but the *pinus excelsa* and other species of the pine and the fir occupy the slopes and the valleys. We halted here this day in order to collect provisions, which we were now much in need of.

33. On the following day we marched in an easterly direction to the small village of Giabasurthong about 3 miles distant and elevated 8,050 feet. A road leads from here to Chundi monastery lying a few miles to the south-east, and thence on to Buxa Duār. Our direction lay over a spur to the north-east and on to Giaba La (pass), height 9,800 feet, which we gained after marching about 4 miles. This pass is situated on the high spur starting from the Ma-song-chong-drong-ri peak. The Chu La and Sang La are on this same spur which terminates at the junction of the Ha Chu and Wong Chu. A little snow was lying here and there on the Giaba La from which a fine outlook was obtained to the distant peaks and ranges on all sides of the horizon. Having taken bearings of several peaks I descended from the pass to Wanakha village, a distance of about 3 miles. We made a temporary halt for two hours at a spot some 400 paces east of the village, near a flour mill, and then started in a north-east direction over a spur to the large village of Tashigong, height 7,400 feet, where we slept that night, and distant about 4 $\frac{1}{2}$

miles from Wanakha. The inhabitants here number about 150 souls. Darbir Dzong, height 7,500 feet, a place of some importance, is situated to the north, distant about  $\frac{1}{4}$  mile from Tashigong, stood just above our line of route, on an almost inaccessible rock overhanging the Wong river. A fine view of the upper valley of the Wong river is obtained from this village. The large and important village of Pāga was seen lying about 7 miles distant to the north-east.

34. On the first day of the Tibetan year all the inhabitants of the Wong river valley as well as others from adjacent parts, are to be found making holiday at the Pāga monastery, where throughout that day the attendant priests dance and feast to the amusement of on-lookers.

35. After a halt of another day at Tashigong, we left it on the 23rd, and passing below Darbir Dzong we picked our way over very dangerously precipitous ground for about 1 mile to the large wooden bridge of 160 feet length over the Wong river, called Dokhang Sampa, elevated 6,750 feet. A guard is maintained at this bridge, and after paying the usual tax of six annas per head we crossed it and at 300 paces beyond, struck the main road between Buxa Duār and Tashichu, near a temple situated at the junction of the roads. Following the main track we ascended to the Sema La (pass) distant about 8 miles from the bridge and elevated 8,980 feet, and then descended for about 1 mile to the large village of Kapcha. The fort of Kapcha (Dzong) is situated 200 paces south of the village, and to the east were seen several hundred houses of villages scattered about 2 miles distant. Kapcha contains a monastery supporting about 30 priests. A road leads from the village to the Tarka La or Tāka La (pass) to the east distant about 9 miles, and thence runs to Angduphorang to the north-east. It was my desire to penetrate to Shonga Dzong by the Tarka La, but in consequence of the unsettled state of the country and of the risk I would have been exposed to thereby, my intentions of pursuing an easterly direction had to be abandoned.

36. The Penlop of Tarka or Tāka some few years since had been murdered and his Government usurped, but his seven surviving sons with many of his faithful adherents fled to Tongsa and there abode for many years. On the sons arriving at manhood, they determined to regain their father's property and to avenge his death. With this end in view they stealthily entered the Tarka Dzong or Tāka Dzong one night and set fire to the houses. The ruling Penlop along with many followers fled precipitately, leaving the fort in the hands of the seven sons of the murdered predecessor. All this was transpiring at the time of my arrival at Kapcha village, not far from the scene of these disorders, and it was this disturbance that barred my entrance into Tāka.

37. Like the Government of Tibet, that of Bhutān is divided between a secular head on the one hand and a religious one on the other, neither of whom, however, exercises more than a nominal authority. The former exercising what little political authority he possesses at the dictates of his powerful barons, while the latter is supposed to be absorbed in the contemplation of all that concerns the spiritual welfare of his subjects. In fact the Deb Rāja is raised to the chief secular headship of Bhutān by the prowess of the most powerful Penlop or Jongpen, who generally selects a near relative to fill this high station, and thenceforward supports that authority with all his powerful aid. The religious head of the Government is styled the Dharma Rāja and is supposed to be an incarnation of the preceding deceased Dharma, who is selected at a very tender age of infancy, from a fancied precociousness of manner, by the combined advocacy and exertions of all the chief monasteries of Bhutān.

38. The most powerful chieftains of Bhutān are the Penlops of Tongsa, Pāro and Tāka or Tarka, also the Jongpens of Thimbu, Punakha and Angduphorang, and these are incessantly intriguing and plotting against each other to seat on the nominal throne of Bhutān some relative of their own. It thus comes about that hardly a single decade passes without a fresh outburst of anarchy and misrule, the result of a striving for the mastery. The chieftain who places the Deb on the *gadi* is thenceforward bound to uphold that authority. All the revenue of the country is conveyed to the Deb Rāja, who in his turn is saddled with the support of a large following, as also the support of the Dharma Rāja with the chief monasteries where the latter periodically resides. The officials attached to the Courts of the Rājas as well as those of the chieftains have the following titles:—1, Zimpan; 2, Dunyer; 3, Niarchan; 4, Solpan; 5, Chhipan; 6, Gorapa; 7, Chibzhan; 8, Chibzhankiangpa; 9, Zimgap; 10, Pogapa; 11, Petiong; each having his special rank and is always supposed to be at the respective head-quarters. The chief towns of Bhutān are, Tashichu, Pāro, Punakha, Angduphorang, Tongsa, Tarka or Tāka and Bioka.

39. On the morning of the 24th, we left Kapcha and travelling south along the main road descended for about 2 miles to the Tanakpho Chu (stream), height 6,750 feet, which flowing from the direction of the Tarka pass, to the east, falls into the Wong river near its junction with the Ha Chu. Crossing the Tanakpho Chu by a wooden bridge 40 feet long



and raised very high above the surface of the water, we continued in a southerly direction, the road now ascending and now again descending, till we arrived at Chukha Dzong a distance of about 14 miles from the bridge.

40. Very early on the morning of the following day we prepared to cross the large bridge at Chukha, 250 feet long, but were opposed by the guard stationed at it and were told that unless the Jongpon's passport was produced, we could on no account be permitted to cross over. Seeing the determination of the guard not to let us pass, there was no alternative left, but to go and plead our case with the Jongpon in person; so we hid our surveying instruments and presented ourselves before the Jongpon who treated us kindly, but was firm as to not letting us go at once. This individual said that as the Thimbu Jongpon, the first minister of the Deb Rāja, was on his way down from Tashichu Dzong to Buxa Duār and would be in Chukha in two or three days, it would be best for us to stay there and to receive his orders to move on, for we were now looked upon as suspects.

41. The Thimbu Jongpon arrived at Chukha on the 7th January, and the same day we were conducted into his presence. After various interrogations as to where we had come from and where going and the object of our journey, he asked me if I had not a gun in my possession? Answering in the affirmative, he ordered me to produce it and when it was shown to him, he said that he would keep it for his own use. He however told us that he would grant us permission to travel on to Buxa Duār in consideration for the gun that he kept. The Jongpon left for Buxa Duār on the 9th, giving us permission to follow him as we wished. Chukha is elevated above the sea 3,850 feet and has a warm climate. Game abounds here. A road leads from the village to Tarka pass.

42. Crossing the bridge at Chukha on the morning of the 11th January, we marched about 9 miles and encamped about midway between that village and Maruchom, our next halting place.

43. The next day continuing our journey for about 8 miles we reached Maruchom village of 20 houses and elevated 4,050 feet. A road leads from here across the Wong Chu (known here as the Thing Chu) to Tarka Dzong. Between Chukha and this place the Wong Chu flows between high precipitous banks, dangerous in the extreme, and in consequence the road is carried not along the bank, but about 1 mile away from the river to the westward.

44. We continued our stay at Maruchom on the 12th, and on the following day marched about 9 miles to the small village of Arikha.

45. On the 14th, we proceeded on our journey and at about 7 miles distance gained the summit of the Singchhu La (pass), height 5,700 feet, situated on the boundary between the British and Bhutān territories and on the same range or spur as that on which the pass of Tegong La is situated. Descending from the pass we proceeded south and at about 5 miles distance arrived at Buxa Duār. Having failed in my endeavours to penetrate Eastern Bhutān, I was nevertheless hopeful that the Thimbu Jongpon, to whom I had given a gun, would yet do me a good turn by granting me a passport that would serve me hereafter in Bhutān. With this object I again appeared before him at Buxa Duār and urged my petition. He gave a passport that would have entitled me to travel wherever his jurisdiction extended, without molestation, but said that it was beyond his power to grant me one that could carry authority in Eastern Bhutān. He, however, wrote to the Deb Rāja asking for this boon for me; but the reply came back after 15 days to say that whoever the petitioner was to send him up to Tashichu Dzong and that after seeing him the request would be granted. During the interval between the despatching of the letter to the Deb Rāja and receiving his reply, the Thimbu Jongpon asked me to make some purchases for him of ammunition for the gun and various other small articles, and in compliance with his wishes I visited Darjeeling and returned with the things. Seeing that the Thimbu Jongpon could not do more for me than what he had already done, I took leave of him and engaged the services of a Lama to guide me through Eastern Bhutān. I, however, carefully kept the passport given to me and glad I am that I did so, for though it possessed real authority only in the Thimbu Jongpon's jurisdiction, yet as it was a genuine document, it served me many a good turn, as the sequel will show, whenever a difficulty arose in Eastern Bhutān to let me pass on or not.

46. With this Lama guide we left Buxa Duār on the 9th February, and travelling by bullock train, rail and steamer, arrived at Gaubāti on the 21st, from whence we marched to Dewangiri where we arrived on the 26th. At Dewangiri I observed only Bhutanese inhabitants with a sprinkling of Nepālese. It is a large village of thatch huts but no *pakka* buildings, and is elevated above the sea 2,700 feet.

47. On the 26th, we traversed the road from Dewangiri to Chugi-hut, a distance of about 6 miles and here we stayed the night. This place is the resort of numerous families from



Bhutān, who during the winter months bring down horses and articles of commerce to sell and barter for the produce of the plains. As many as 300 grass huts are annually erected for their accommodation by themselves.

48. Leaving Chugi-hut on the 27th, we proceeded along the Chugi Chu (stream), crossing and recrossing it several times and after marching about 10 miles encamped on its left bank. The ascent in this day's march was gradual, the valley varying from 200 feet to half a mile in width and covered with good pasture for cattle.

49. We left our last encampment on the 28th, and proceeding about 9 miles over steep ground, gained the summit of the Tungka La (pass), height 7,900 feet. This pass is situated on the ridge trending to the south-west which terminates near the junction of the Dāngma Chu and the Tongsa Chu (rivers). A monastery named Tungka Gom-pa has been erected on the pass, two hundred paces from which is a long and old *mendong* (temple) some 150 feet in length. A road leads from the pass to Karu Gom-pa to the north and thence on to Tashigong Dzong and Tawang. Provisions were procured at Tungka Gom-pa, after which descending in a north-west direction for about 5 miles we reached the right bank of the Kongri Chu (stream) and here we halted for the night, at an elevation of 4,025 feet. The vale of the Kongri Chu is broad and pretty level and affords pasture to numerous herds of cattle. Fish is plentiful in the stream and cultivation is carried on extensively on both banks.

50. On the morning of the 1st March, we broke up camp and following the course of the stream we crossed and re-crossed it about a dozen times and arrived at its junction with the Diri Chu, a pretty large stream. The height at the junction I found to be 1,590 feet, and in consequence of the low elevation of this entire vale, fever is said to prevail. Passing over the wooden bridge 80 feet long over the Diri Chu, we proceeded in the same general direction and arrived at the very long chain bridge, height 1,500 feet, over the Dāngma Chu, which is hereabouts some 300 feet wide and flowing with a rapid current. The guard at this place opposed our progress and demanded the passport of the Tongsa Penlop before we could be permitted to proceed. Hereupon I produced that given me by the Thimbu Jongpon at Buxa Duār, and after a detention of a couple of hours we were allowed to proceed on our way, and ascending by a stiff climb we marched to the large village of Kenga, height 4,500 feet, distant from the bridge about 5 miles. The Dāngma Chu rises at the foot of the high snowy peaks in the extreme north, one branch flowing past Tawang to the north-east and the second flowing by Tashiyangsi, both of which unite a little to the north of Tashigong and after receiving numerous minor tributaries is joined by the Kuru river, the Pumthang river and the Tongsa Chu, all large rivers. Finally the Dāngma Chu or Manās river finds its way to the Brahmaputra below Gauhati. It is hardly fordable in any part of its course below Tawang, for besides its rapid current, the volume of its water is great and indeed, with perhaps the sole exception of the Kuru Chu, it may be said to be the largest river of Bhutān. Eastern Bhutān, lying to the east of about longitude 91°—from the Monlākāchung range to the Thungsi La (pass) and the ridge running from thence south-wards—is divided into two parts, known as Kurted and Kurmed—upper and lower Kuru—the people speaking a language, called Chingmi, is entirely different to that spoken in Western Bhutān, and are as a race better, though uglier and dirtier, than their western neighbours. Kurted is that portion lying north of a line drawn from Tashigong to Thungsi La (pass), and Kurmed the portion south of the same line. The former possesses lofty snow-clad mountains and peaks and is extremely cold and unfavorable for cultivation, while in Kurmed the climate is less severe and the people are given much to cultivation and bartering, and are as a rule industrious, the women even taking part in all active duties equally with the men. To the west of the village of Kenga stands a monastery 400 paces distant and in this locality cultivation is extensively carried on.

51. Leaving Kenga on the 2nd March we ascended a spur for about 3 miles and came across a small *churtan* (temple), and after another mile reached the pass of Kenga La, height 5,650 feet, situated on the same ridge as the passes of Dongo La and Thebong La, and which terminates at the junction of the Kuru and Dāngma rivers. A monastery stands on the ridge about 1 mile distant to the south-west of the pass. Leaving the pass behind us, we pursued a north-westerly direction, and at 6 miles reached the ruined village of Tongla Kenga, height 4,750 feet, situated on a fine plateau; and about 4 miles further on arrived on the bank of the Sindo Chu, flowing from the north-east and emptying itself into the Kuru river 500 paces lower down. We forded the Sindo Chu and descending about  $\frac{3}{4}$  of a mile, arrived on the left bank of the Kuru Chu, height 1,900 feet, and then ascending the river for about 5 miles, halted for the night on the same bank. These last 5 miles was over a very precipitous path.

52. On the following day we continued our ascent of the river for about 7 miles, arriving at the Kuru Phāsam bridge spanning the Kuru Chu, height 2,000 feet. A road leads from the bridge along the river in a northerly direction into Lhobrak, by which road it was my desire to send one of my companions, while I would pursue a north-westerly direction; but on learning

that several large bridges over the Kuru would have to be crossed and that difficulties with the guards were sure to arise, I abandoned that project. After a detention of three hours, we crossed the Kuru Phāsam bridge of 300 feet length and formed of stout timber and turned to the south for about a mile and arrived on the bank of the Shonga Chu near its junction with the Kuru river. Continuing our march in a north-westerly direction for about 5 miles we arrived at Shonga bridge, made after the pattern of the last, whose height I found to be 2,810 feet. The Shonga Chu rises at the foot of the Thungsi La. We crossed the bridge and on the right bank about 100 paces distant reached the village of Shonga possessing a Dzong or fort, the Jongpon of which had gone on business to the Deb Rāja, leaving as substitute a Zimgap, who detained us till the 11th March, fearing lest he should get into trouble by permitting us to go onwards, and it was only after making him presents and declaring on oath that we would travel by way of Bioka Dzong, that he allowed us freedom to move away. The fort of Shonga stands on a small spur 400 paces south-west of the village and is elevated 3,000 feet.

53. Early on the 12th we quitted Shonga and following up the stream for about  $1\frac{1}{2}$  miles, crossed it by a bridge, and then proceeding another  $2\frac{1}{2}$  miles crossed the Sāling Chu also by a bridge, height 3,150 feet, and then ascending a stiff spur for about three miles arrived at the village of Sāling, height 5,160 feet, where we noticed cultivation. We left the Shonga valley behind us at the Sāling bridge. It is well watered and green, but being of low elevation is hot and feverish and is, like most of the valleys traversed in these regions, covered with pine and fir trees of magnificent growth.

54. Leaving Sāling on the morning of the 13th we ascended in a north-west direction for about 8 miles to a pile of stones called *lapcha*, near a pass over a spur, height 8,700 feet, then crossing the spur and marching for about 6 miles reached the left bank of the Shonga Chu where we halted for the night. The entire route traversed this day was through thick forest. Rain fell during the night and added to our discomfort.

55. On the day following we crossed the Shonga Chu and two other small streams by bridges and travelling about 4 miles, arrived at Singur village, height 9,800 feet, situated on a grassy plateau, surrounded by magnificent specimens of the silver fir called by the people Dungsing. Game abounds in this locality and I noticed immense herds of yāks (*chauries*) and cows grazing in the neighbourhood. The people here are not given much to cultivating the land but tend their immense herds and barter butter for other commodities. The population of this place is about 200, consisting of Bhutanese and Chingmis, who are continually pressed into the service of the state as baggage carriers, whenever officials travel up and down.

56. Leaving Singur village on the same day we began an ascent, and after about 6 miles marching, gained the Wandong La (pass), height 12,490 feet, from which a fine view was obtained of the country lying to the east and north-east. This pass is situated on a spur of the same ridge as that on which is the Thungsi La, and when we crossed it snow was still on the ground even in exposed places. Crossing the pass and taking a north-west direction through forests of the silver fir for about 5 miles, we reached the Lāba rest-house, where we halted for the night, height 10,660 feet. Firewood is abundant here. A small stream flowing from the Thungsi La passes this spot on the right hand and finds its way to the Shonga Chu.

57. Starting very early on the morning of the 15th we began a stiff ascent and after about 2 miles marching gained the summit of the Thungsi La, height 12,500 feet. This pass is situated on the high range coming from the north and which terminates at the junction of the Pumthang and Dāngma rivers. On reaching the pass a splendid view was obtained of all the country around, enabling me to take numerous bearings to distant as well as nearer peaks. I noticed a *mendong* (temple) at the pass. These *mendongs* are nothing more than piles of *pakka* masonry of rectangular shape, varying in size, and are generally erected on the tops of passes and at junctions of roads, on the walls of which are chiselled numerous inscriptions of the familiar though mysterious religious formula "*Om mane padmi hom*" of the Tibetans. *Churtans* are also religious erections, but have on the other hand the appearance more of the usual temples of Hindustan, tapering up into a narrow spire; more labour and pains are employed on these latter than on the former. Shortly after leaving the pass we continued our descent through a fine forest of silver firs, till we reached the Mānichhukhor temple distant about 3 miles from the pass, height 10,800 feet. An enormous mass of paper wrapped together and covered with cloth, containing the one mysterious sentence "*Om mane padmi hom*" was here placed on an iron axle and turned by a small stream. This revolving of the paper prayers answers as a substitute for those of the priests, and it is so placed as to turn from right to left.

58. Leaving the temple behind, we continued our descent, and at 400 paces came to the Shinka Chu (stream), crossing which by a bridge, we made an ascent of about  $\frac{1}{2}$  a mile and reached Ohra Mendong, height 11,300 feet, situated on a spur. I now directed our baggage carriers and the rest of our party to make for the Ohra La by an upper road, and taking

a guide only along with me, I entered the village of Ohra in order to procure some provisions, for we were running short. On seeing us the villagers declared that orders had been sent to arrest and detain all travellers passing through, but while the men went to report to the Jongpon the fact of the arrival, we made our escape, and continuing our march for about 4 miles, gained the pass of Ohra, height 11,890 feet, which we crossed and then continued on our way, descending for about  $\frac{1}{2}$  a mile and then encamped below the road in a fir forest, for we were apprehensive of being overtaken by the people of Ohra village who must have been in pursuit, we thought. Ohra is a very large and important village, possessing a fort and two monasteries, situated on an extensive open, grassy plateau, elevated 10,500 feet above the sea level and, watered by the Ohra Chu. Cultivation is carried on extensively here, though the climate is cold. Cattle, horses, mules, asses, goats and sheep are to be seen here in large numbers, and altogether the village may be said to be rich and the people prosperous. The appearance of the inhabitants, who number about 300 souls, was also an improvement on what we had become accustomed to see up to this place. Trade is also carried on on an extensive scale, the people taking their articles for sale as far as Dewangiri in the south, and into Tibet across the northern frontier. The manners and customs of the people assimilate slightly to those of Tibet.

59. Leaving our encampment on the morning of the 16th, we pursued a north-westerly direction and at about 2 miles crossed the Tängsbi Chu stream by a small bridge, height 9,900 feet. We saw the large village of Tängsbi, of 40 houses, lying 400 paces to the south of the road. Continuing our journey for about 2 miles more of ascent, we came across a chorten on the summit of a spur, height 10,800 feet, from which we began a descent, and at about 4 miles distance reached the large wooden bridge 130 feet long over the Täng Chu stream, elevated 8,900 feet. The Täng Chu is a pretty considerable river, with a very rapid current, taking its rise in the southern slopes of the high northerly range of mountains east of the Monlākāchung La and entering the Pumthang river 2 miles below the bridge, to the south. A road leads up this stream into Kurted and thence into Tibet, passing through numerous villages. We encamped for the night at about  $\frac{1}{2}$  mile distant from the bridge to avoid being questioned by the curious, and in consequence of rain and wishing to rest ourselves a little, we made a halt here on the 17th.

60. Crossing over the Täng Chu on the morning of the 18th, we followed the course of that stream from about half a mile to the south, and ascended a small spur, where we saw a *churtan*, from which we descended for about another  $\frac{1}{2}$  mile and reached the left bank of the Pumthang river, ascending which for about 4 miles we arrived at the large wooden bridge of Bioka, height 8,950 feet, and about 150 feet in length. We passed over the bridge and 400 paces distant reached the large village of Angduchholing situated about 500 paces east of Bioka Dzong, and whose height I found to be 8,900 feet. The fort of Bioka Dzong would appear to be one of the most important in Bhutān, the Jongpon of which appears to be a very powerful chief, his rule extending over the entire country known as Pumthang, embracing the tract or basins of the Pumthang river and the Täng Chu as far as 8 miles below their junction. Bioka Dzong, height 9,300 feet, is built on an eminence overhanging the river, its wall, which is about a mile in circumference, being built of stone. The buildings within the wall rise to the great height of 150 feet, and are occupied by the chief and his retainers. There is no water in the fort, but a well-built covered way has been constructed to a spring near the river bank, from which the water supply is obtained. In this neighbourhood numerous monasteries exist, attended by a proportionate number of priests, and it may be said that the chief interest of Pumthang centres at this village of Angduchholing, as being better populated than any other part through which the river flows.

61. In vain did I appeal to the Jongpon of Bioka to let us depart, "for" said I, "our stock of provisions and means of support were fast disappearing, and as it was my intention to worship at one of the sacred shrines of Tibet, it was hard to detain us." He replied that "as there was dissension between Bhutān and Tibet at the time, it was from motives of prudence that our detention was found to be imperative"; and thus we lingered on, much to our disgust, at Angduchholing up to the 8th of April, and it was only after making the Jongpon large presents that he consented to our going forward. A road leads from here into Kurted to the east and another to the west leads *via* Tongsa to Punakha, but the main traffic road leads northwards over the Monlākāchung La into Tibet. The climate of Pumthang is most salubrious, and disease is hardly known to exist there. Splendid forests of pines and firs adorn the lower ridges, spurs and even the valleys, while game of every description roams at large under their shade, with little or no fear of molestation, for the people are averse to taking life, even of wild animals. Trade is also carried on extensively by the people of this part, as well as the cultivation of *phapar*, wheat, buck-wheat and potatoes. Women employ themselves chiefly in the manufacture of cloth and blankets. Re-crossing the Pumthang by a bridge higher up the river and distant about 1 mile from Angduchholing, we continued up the left bank for about 3 miles and reached the junction of the Tur Chu (stream) with the Pumthang. The former is a pretty considerable stream

having its source south of the Kulha Kangri peak. Up this stream a road leads to Punakha to the west, while a branch follows up the river, crosses the Chhachhu La (pass) and then turns east to Chhampa. The valley of the Tur Chu is very green and abounds in good pasture, as witnessed by the numerous herds of cattle taken there to graze.

62. Leaving the junction above mentioned, near which—on the opposite bank—is situated the village of Dorjbir, we proceeded about 1 mile and arrived opposite the village called Thankabir, of 40 houses, at a bridge, and continuing about  $\frac{1}{2}$  mile further, came to the Shugtāg monastery and village and then ascending the river for about 3 miles more arrived at Sangalakhang monastery and village, height 9,460 feet. About 1 mile higher up we reached Doram village, another mile and a half brought us to the small stream called Dampbi Chu which we crossed and then 50 paces more took us to the Dampbi bridge across the Pumthang, over which we went, and after about  $\frac{1}{2}$  mile more travelling we reached Shabjethang temple, height 9,690 feet, and here we stayed for the night and the whole of the day following.

63. On the morning of the 10th we left the temple and crossing the Nasbi Chu, a small stream, reached the village of same name containing 10 houses, distant about 1 mile from the temple and elevated 9,790 feet. The pine grows up to this point but not higher. Up to this village, all the way from Bioka Dzong, may be seen numerous villages on either bank of the river, the names of a few only of which I have recorded; but from this village to the Monlākāchung pass, only two villages are in existence, as will be seen lower down in the narrative.

64. Leaving Nasbi village behind we travelled up the river for about 4 miles, reaching the Sur Chu (stream), height 10,250 feet, which we crossed by bridge, and then proceeding onwards about 2 miles, came to a small lake called Chozho, the usual halting place for travellers; but we did not stay here, for ascending the river another 2 miles we reached the junction of the Khenda Chu with the Pumthang river, height of which I found to be 10,510 feet. Good grazing is to be found up the Khenda Chu which flows from the north-east.

65. Leaving the junction we proceeded up the river some 3 miles and crossed the large wooden bridge over the Pumthang, height 10,870 feet, and ascending the left bank for about 2 miles arrived at the Kopub (Rock) and cave, height 11,050 feet, and here we stayed that night; for travellers as often stay here as at Chozho lake.

66. After 2 miles marching on the following morning, the 11th, we came up alongside a bridge across the river, height 11,580 feet, which leaving behind and travelling about 4 miles further, we reached the junction of the Kurmathāng Chu with the Pumthang, height 12,200 feet; the former flowing from the Kulha Kangri peak and watering a fine valley, in which is situated the small village bearing the same name as the stream, the inhabitants of which never desert it at any time of the year, but employ yāks on hire for conveyance of travellers' baggage across the Monlākāchung pass. Passing the junction we proceeded up the river and at about 2 miles came alongside the Chhampa bridge across the Pumthang, the height of which I found to be 12,360 feet. We continued ascending the river for about  $\frac{1}{2}$  of a mile and arrived at Chhampa village, height 12,550 feet, a place of some importance from the fact of a Bhutanese guard being stationed here and besides it being a place where barter is carried on. The exports from Tibet are chiefly salt, blankets, wool, skins, tea in bricks (of several qualities), musk pods and earthen pots, of which salt and wool take the first place with regard to quantity exported. These are either sold for cash—in the currency of Tibet—or are bartered for the following commodities, *viz.*, *bure* (a kind of silk), *khamar* (colored silk), *yultha* (a cotton cloth), brass utensils, silver, jewellery, rice and tobacco.

67. On the morning of the 12th, we continued our ascent up the Pumthang, now reduced to a small stream, and at 2 miles distance reached Lhabja cattle-shed, beyond which fuel is not procurable, for at this point even the silver fir and the rhododendron cease to grow. Moving upwards for about 8 miles we reached Phukbakha (Cave) and halted there for the night, height 15,400 feet. Two miles beyond Lhabja, a road leads up a stream to the east and crossing a pass on the same ridge as the Monlākāchung pass, enters Tibet. Owing to heavy falls of snow we were detained at the Phukbakha (Cave) on the 13th, 14th, 15th and 16th, and very miserable indeed we were, for the accommodation in it was scant and the low roof prevented our standing.

68. The morning of the 17th broke bright and clear and we ventured out to scale the pass, and after a mile of ascent reached the small frozen lake called Larcha Cho, of about 1 mile circumference, and elevated 15,500 feet above the sea. This lake is the source of the Pumthang river. After about 3 miles more of stiff ascent, with much difficulty we gained the summit of the Monlākāchung pass, height 17,500 feet, where the eye ranged over a sea of snow, and the wind adding not inconsiderably to our almost unbearable trials. This pass is situated on the lofty range trending in an easterly direction from the peaks of Kinchinjunga to Chumalhāri and Kulha Kangri, and terminating about 40 to 50 miles east of the pass. This elevated watershed is confined between the upper sources of the Kosi and Manās rivers and presents one unbroken wall of snow and ice, extending for nearly 200 miles, from the eastern

frontier of Nepāl to Eastern Bhutān. Having taken my observations to the many peaks visible we began the descent into Tibet, which is not near so steep as the road on the southern face of the pass, and after travelling about 5 miles through deep and fresh fallen snow, we reached Suphuk cave, where we stopped that night. A small lake, the source of the Yura Chu, lies to the east of the cave about a mile distant. Great masses of glaciers lie on either side of the pass as is to be expected at such an altitude.

69. On the morning of the 18th we followed the course of the Yura Chu (stream) till we came to the rest-house on this side of the pass, where goods are collected prior to being conveyed across the frontier, but from fear of being detained we did not stop here, but continued our journey for another 4 miles to the hot springs of Lhagpāchachu, where we halted for the night, height 15,200 feet. There are about 50 hot springs at this spot, the water of which varies in temperature, from tepid to almost boiling heat, and possesses a strong sulphur smell. The people from all parts who desire to be cured of any disease resort here for the purpose of bathing in these waters, and a house has been erected at the spot, in the centre of which a tank has been constructed and the water from the springs conveyed thence by cuttings in the soil. Occasionally those who have faith in its curative properties, stay in the tank throughout the night, and, indeed, if report says the truth, much benefit is derived by immersion in these sulphur-impregnated waters.

70. Leaving the hot springs on the morning of the 19th April, we travelled along the course of the stream for about 5 miles to a *churtan* and a *mendong*, 300 paces beyond which the Gunsa Chu (stream) flowing from a north-westerly direction enters the Yura Chu. Three miles up the Gunsa Chu is seen a monastery and 5 houses and immense masses of glaciers and ice are seen near the source of this stream, beyond the monastery. Crossing the Gunsa Chu and travelling 500 paces further, we came to Yura Dzong situated on the left bank of the Yura Chu, the height of which I found to be 14,650 feet. Yura Dzong stands about 100 feet above the stream and is surrounded by 20 houses, the inhabitants of which are chiefly employed in trade, for though cultivation is carried on here the land yields but a very sorry return for the labour of tilling it, and this to a great extent must be expected, taking into account the extreme elevation of the place. On our arrival at Yura Dzong we were taken to the chief man, called Deba, and by his orders were confined in the fort and searched, though fortunately for us our instruments had been concealed before our arrival at the fort under some rocks and snow on the route hence. The Deba of the fort proved to be a minor official who takes his orders from the Tuwa Jongpon, an official residing at Tuwa Dzong, a day's journey lower down the stream. A report was sent by the Deba of Yura Dzong to his superior at Tuwa stating that a number of men professing to be on a pilgrimage to some shrine in Tibet, had found their way to Yura and were detained there awaiting his orders. About 20 Tibetans were here also in custody. Several days elapsed before the Tuwa Jongpon made his appearance on the scene at Yura, and when he did arrive we were forthwith conducted into his presence and were rudely questioned by him as to the object of our journey, &c., but finding our story consistent and apparently truthful he remanded us back into custody with orders to await the wishes of the Lhāsa authorities, who he said could alone decide our fate, for at that time great excitement prevailed throughout Tibet in consequence of reports that the Russians from the north and the English from Darjeeling were planning to invade the country. Fear and consternation took possession of all the people, and taxes were levied in the shape of gunpowder and ammunition from every village. Fresh guards were forwarded with orders to strengthen all the passes into Tibet and every precaution was taken to avoid a surprise by their imagined enemies. It was at this juncture that we entered Tibet, and thus a more rigorous treatment of all travellers was carried out than perhaps would have been the case had the time of our arrival not been at this particular period.

71. Orders were ultimately sent to Yura Dzong to forward us on to Tuwa and thus on the 1st May, we left Yura under guard, travelling along the left bank of the stream which we crossed at about 7 miles distance and about a mile further we entered Seh village containing about 80 houses, and elevated 13,900 feet, overlooking which is the large monastery of Sangkar Guthok. On our arrival here we were placed under a guard, and on the day following were to be taken on to Tuwa Dzong. Sangkar Guthok monastery holds about 100 priests at the head of whom is an intelligent Lama supposed to be learned in Tibetan religious lore. It contains several hundred volumes of Tibetan writings, besides numerous richly adorned images and a large quantity of wooden type which is used in the printing of their books. Seh village is situated on the right bank of the Yura Chu which here flows through a fine grassy valley, rich in pasture for cattle and surrounded by lofty snow-clad mountains. The villagers, who number about 300 souls, appear prosperous and even rich in the possession of large herds of cattle, yāks, horses, mules and asses, which roam over the valleys; the yāk in particular obtaining their highest consideration and greatest care, for besides its use as a beast of burden, its fine milk and long wool are sources of much profit to their owners. Cultivation is carried on pretty extensively here and trade is brisk for these parts. A hot spring about a mile north of

the village of Seh affords the villagers facilities to enjoy the luxury of bathing in warm sulphur spring water as often as opportunities offer, or disease prompts them to avail themselves of a cure; for their faith in these healing waters has passed into a proverb. A road leads from Seh village in a north-westerly direction across the Mon-da pass, from whence roads diverge to Lhāsa, Shigātse and Phari. Another large road leads south-east to Lhā-khāng Dzong, a place of some importance, which is reached on pony back in two days. At Lhā-khāng Dzong a large bridge spans the Lhobrak river where a guard is stationed and tolls are collected. From Lhā-khāng Dzong a road leads along the Lhobrak southwards to Lingtsi Dzong which is said to be four days' journey, the road crossing and re-crossing the tortuous river by as many as 30 bridges placed at intervals apart and which during each successive rainy season are regularly carried away by the swollen stream in its impetuous, headlong course. The Lhobrak river below Lhā-khāng Dzong is confined within high, rocky and precipitous banks, in a rocky bed over which the water tears its way. Its sources are near the Kulha Kangri range and the range on which is situated the Shar Khalep pass. Seeing that we were now virtually prisoners in the hands of the Tibetans and being apprehensive of ill treatment, we concerted a plan to escape if possible, and so leaving all impediments behind in the tent, we rose at midnight of the 4th May, and leaving the bank of the Yura Chu, adopted an easterly direction and marching with a step to which fear gave fresh impulse and spur, we reached the right bank of the Lhobrak Tsāng-po river, which with difficulty we forded, and there ensconced ourselves from fear of being overtaken by the guard whose vigilance we had eluded. The same evening we pursued our course to the Lhobrak pass, some 6 miles from the last resting place, and then descending for about 6 miles more we again concealed ourselves in a cave.

72. On the 5th, in the very early morning, we began our move in an easterly direction and reached the right bank of the easterly branch of the Lhobrak Tsāng-po river and observed every precaution against a surprise by those who may have been in pursuit.

73. On the evening of the 6th, crossing the river we struck the main road leading to Lhā-khāng Dzong at 2 miles, and fording it continued our journey for about 5 miles and then overcome with fatigue stopped at a small stream.

74. Early on the morning of the 7th, still pursuing the same general easterly direction for 4 miles, we arrived at Lhobrak Kharchu, a place held in great veneration by all Tibetans and even Bhutānese, who resort here to worship and to carry away the sacred water which percolates through a rock and drops on the floor beneath. I estimate the distance we travelled from Seh to this place to be some 50 miles.

75. Leaving Lhobrak Kharchu we ascended the pass above it about 5 miles distant and elevated 16,500 feet. The pass is situated on the high range which forms the watershed between the rivers Kuru and Dāngma and, as its height would indicate, is above the line of perennial snow. Descending the pass we reached the bank of a small stream some 7 miles distant and here we stayed that night.

76. On the morning of the 8th May, we continued our descent to the Tashiyāngsi Chu (stream), about 3 miles distant, which rises near the Kharchu pass and falls into the Dāngma Chu lower down. Crossing the bridge over the Tashiyāngsi Chu we followed the course of the stream for one mile and then ascending for 6 miles more, stopped for the night at a cave near a rivulet, where, in consequence of heavy rain and a sharp biting wind, we were detained till the 11th.

77. On the 12th, pursuing a south-easterly direction we crossed the Dozam La (pass), 4 miles distant, and descending for 4 miles more, reached a grassy flat where we halted.

78. On the 13th, travelling over ascents and descents for about 9 miles, we reached the Dozam Chu, one of the northern branches of the Dāngma river.

79. On the 14th, we followed the course of the Dozam Chu for about 6 miles, then turned to the east for about 2 miles, and halted.

80. On the 15th we marched about 12 miles over ascents and descents to near Men Chhuna Dzong. Two days more of marching brought us to Tawang (Men Tawang) and 5 days more to Odalguri along the same route traversed by Nain Singh in his journey from the Tso Morari lake in Ladākh to Odalguri, in 1874, and thence we found our way to Gauhāti on the 31st May 1886 and by steamer and rail arrived at Darjeeling on the 3rd June.

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NOTE.—The heights noted by the Explorer must be looked upon as only approximate, being those indicated by an aneroid barometer graduated to show Heights above Sea Level as well as Inches. The distances as herein given are not map distances but those estimated by the Explorer along the zig-zags of the route he traversed.

The provinces into which Bhutān is divided, and the districts included in each are stated by Rinzin Nimgyal to be as follows:—

Provinces in Bhutān.

No.	Province	Rivers within the province.
1	Tongsa ... ..	Tongsa river or Mati Chu.
2	Paro ... ..	Ammo river, Ha Chu or Paro Chu.
3	Punakha ... ..	Pho Chu and Mo Chu.
4	Angduphorang ...	Punakha river.
5	Taka or Tāga (Tarka) ...	Ditto.
6	Pumthang ... ..	Pumthang river or Tang Chu.
7	Thimbu ... ..	Wong Chu or Thing Chu (Chin Chu).
8	Kurted or Kurtol ...	Kuru river and Tashiyāngsi Chu.
9	Kurmed or Kurme ...	Kuru river and Dāngma Chu.

Districts in each province of Bhutān.

Province	District	Province	District
TONGSA ... ..	Shamgong Dzong.	PUMTHANG ...	Ohra Dzong.
	Tongsa Dzong.		Bioka Dzong.
PARO ... ..	Sangbe Dzong.		Pumthang.
	Tumphiong Dzong.	THIMBU ... ..	Chhukha Dzong.
	Batte Dzong.		Kapcha Dzong.
	Dugia Dzong.		Darbir Dzong.
	Chamurtsi Dzong.		Lingshi Dzong.
PUNAKHA ... ..	Gichha Dzong.		Simu Dzong.
	Nobgong Dzong.		Bela Dzong.
	Punakha Dzong.	KURTED OR KURTOI	Lingtai Dzong.
ANGDUPHORANG ...	Tilāgong Dzong.		Tashiyāngsi Dzong.
	Ula Dzong.	KURMED OR KURME	Shonga Dzong.
	Changchukha Dzong.		Tashigong Dzong.
	Angduphorang Dzong.		Kenga Dzong.
TAKA ... ..	Taka Dzong.		
	Chitta (Chirang) Dzong.		

*Tibetan Topographical Names used on Maps, furnished by Rinzin Nimgyal.*

Phonetic spelling	Transliterated spelling	Meaning
Gnāri Chu* ...	Sngs rigs Ohu ...	Here the river is named after the province called Gnāri.
Chhang (Jang) Chu* ...	Byn Chu ...	North river (in Western Tibet).
Tamjokhā bap* ...	Rta mchhog khā Ahbbs ...	Issued from horse's mouth.
Yarro Tsang-po* ...	Yarru gten po ...	High river (as named in the Tsang provinces).
Tsang-po (Sangpo)* ...	Gtsang po ...	Large river (as named in the Kongbu province).
Dihang* ...	Ahdi han ...	The great (Chingmi language).
Brahmaputra* ...	Bhr m putr ...	Brahmaputra (in Assam).
Dibang ...	Ahdi bong ...	
Singi khā bap ...	Singi khā Ahbbs ...	The Indus (issued from lion's mouth).
Singi Chu ...	Singi Chu ...	Lion-river (the Indus).
Indus ...	Ain dai ...	Indus.
Majā khā bap ...	Rm by khā Ahbbs ...	The Karnāli (issued from peacock's mouth).
Majā Chu ...	Rm by Chu ...	The Karnāli (Peacock river in the Gnāri province of Tibet).
Karnāli ...	Kr n li ...	The Karnāli (in Nepāl).
Gogra ...	Rgog r ...	The Gogra (in the plains).
Gang ga ...	Ganga ...	The Ganges (in the plains).
Lang chhen kha bap ...	Gin chhen khā Ahbbs ...	The Kāli (issued from elephant's mouth).
Kāli (or Sārda) ...	K li ...	The Kāli (in Nepāl).
Gandak ...	Gn dg ...	The Gandak (in Nepāl).
Lho ...	Lho ...	South.
Lo ...	Klo ...	Barbarous.
Gāng ...	Sgang ...	Spur.
Dzong (Jong) ...	Szong ...	Fort.
Yāro (Yaru) ...	Ya ...	High.
Chu ...	Chu ...	Water (stream).
Tsho (Chho) ...	Mtsho ...	Lake.
Chho ...	Tshhos ...	Colour.
Gyatsug (Gyachhug) ...	Rgya gtsug ...	Chinese daily journey's stage.
Gya ...	Rgya ...	China (wide).
Ala ...	Al ...	Allāh (the prophet).
Ring po ...	Rin po ...	Long.
Dhemu ...	Bde mo ...	Easy.
Tong ...	Stong ...	Waste land.
Juk ...	Ahjug ...	Lost.
Po ...	Poo ...	A participle, also name of a caste and district in the south of the Kham province.
Za ...	Gzah ...	Sunstroke, also the name of a planet.
Yul ...	Yul ...	Country.
Tsari ...	Rts ri ...	Grassy hill.
Tsa ...	Rtsa ...	Grass, also bamboo.
Yang-sang ...	Yn gsan ...	Commodious, wide, flat ground, open.
Yang ...	Yn ...	Open.
Miri ...	Mi rigs ...	Mankind.
Mi ...	Mi ...	Men.
Shobang ...	Sho Ahbbs ...	Thick forest.
Angi ...	Angi ...	Figure.
Kyongsār ...	Gyon gar ...	New village.
Kyong ...	Gyon ...	Village.
Sār ...	Gar ...	New.
Tod ...	Stod ...	Upper.
Med ...	Smd ...	Lower.
Kongbu ...	Kon bu ...	South Province of Tibet.
Budha ...	Ahbud da ...	Buddha (Gautama).
Tshi ...	Tshi ...	Life.
Shoi dhen ...	Shos ldn ...	Shoi = vale, Dhen = place.
Kim ...	Kyims ...	Middle.
Zyul ...	Gzah yul ...	Place of banishment of Tibetans south of Kham province of Tibet.
Tazam (Tarjum of maps)	Rtzhm ...	Postal stage.
Ri ...	Ri ...	Hill.
Chhi ...	Rigs ...	Caste.
	Chhi ...	Great
	Mehhi ...	Die.
	Phyi ...	Out.
Dun ...	Hdun ...	Seven.
	Mdun ...	Fore.
	Ahdun ...	Collection.
	Mgo ...	Head.
Goh (Go) ...	Abgo ...	Share.
	Sgo ...	Door.
	Rgo ...	Name of a wild goat.
	K ...	Pillar.
Ka ...	Bkah ...	Order.
	Dkah ...	Difficult (hard).
	Ser ...	Yellow.
Ser ...	Gser ...	Gold.
	Zher ...	Speak.
	Stong ...	Thousand.
Tong ...	Btong ...	Send.
	Gtong ...	Sent.
Toh ...	Gtogs ...	Depend.
	Rtogs ...	Resolve.

\* Name of the Tsang-po river.



*Tibetan Topographical Names used on Maps, furnished by Rinzin Nimgyal.—(Continued).*

Phonetic spelling	Transliterated spelling	Meaning.
Da	Dgra	Enemy.
	Sgra	Voice.
	Ahdra	Like to (resemble).
	Ahbra	
Dang	Brang	Breast.
	Grang	Cold.
	Drang	True.
	Gnm	Sky.
Nam	Rnma	All.
	Nm	When.
	Glu	Song.
	Klu	Mermaid.
La	Rlu	
	Slu	Buy.
	Jha	Tea.
	Bhya	Bird.
Jha	Bhya	To do.
	Sku	Image.
	Rku	Thief.
	Abdug	Is.
Dug	sdug	Trouble.
	Ahbrug	Thunder.
	Shi	Peace.
	Bahi	Four.
Shi	Gshi	Cause.
	Lta	Look.
	Rta	Pony.
	Ta	The 9th letter of Tibetan alphabet.
Ta	Gri	Sword.
	Bri	Writing.
	Dri	Smell.
	Sgrog	Read.
Dag	Ahbrog	Cattle-shed.
	Ahgrog	
	Grog	Friend.
	Zhla	Month.
Dha	Rda	
	Mda	Arrow.
	Brda	Informed.
	Sna	Nose (or sort).
Na	Rna	Ear.
	Gnah	Swear.
	Na	Here.
	Ngs	Wood.
Dho	Rdho	Stone.
	Mdho	Lower (vale).
	Mdho	Volume.
	Gru	Ferry.
Tu	Bru	To draw.
	Gsang	Clear.
	Sang	Weighing-scale.
	Gsan	Straight.
Tsithang	Rtee Thang	Play-ground.
Tee	Rtee	Play.
Thang	Thang	Flat.
Lhasa	Lh s	Place of God.
Lha	Lh	God.
Sa	S	Place.
Pema koi	Pdm bskod	Building.
Pema	Pdm	The Lotus-flower.
Koi	Bskod	Building.
Chham dho	Chhm-Mdo	Lower (country).
Chham	Chham	Dance.
Da-yul	Dgra yul	Enemy's country.
Jior	Rje Bor	A chief.
Tila	Ti La	Centre pass, Ti = centre.
Sang-gna	Sang Sngs	Ancient weighing-scale.
Gna	Sngs	Ancient.
Choi	Mchhos	Religious.
Marpung	Mar Spung	A place for collecting butter.
Mar	Mar	Butter.
Pung	Spung	Collect.
Nub-gang	Nub-sgang	West spur.
Kang	Gang-Gn	Snow.
Pang	Pang	Grass.
Sing dong	Sing Gdong	Lion-face.
Sing	Sing	Lion.
Dong	Gdong	Face.
Dorji (as in Dorjiyu Dzong)	Rdor Rje	Sceptre.
Yu	Gyu	Beads.
Dhawa	Zhla-b	Moon.
Oh (as in Oh Chu)	Aho	Milk.
Nub (as in Nub Chu)	Nub	West.
Sok (as in Sok Chu)	Sog	Mongolian.
Sang ri	Zhang ri	Copper-hill.
Nang (as in Nang Dzong)	Nang	Inside.

*Tibetan Topographical Names used on Maps, furnished by Rinzin Nimgyi.—(Continued).*

Phonetic spelling	Transliterated spelling	Meaning.
Mon-Chho-na ...	Mon Tshhos Sna ...	Hot country.
Mon ...	Mon ...	Power to look.
Tawang ...	Ltdbang ...	Holy place.
Ne ...	Gns ...	Steep wooded country to south.
Lho rong ...	Lhorong ...	Steep wooded country.
Rong ...	Rong ...	Birth-country.
Ki yu ...	Kyi Yul ...	Picture.
Ru ...	Ris ...	Centre.
Ou ...	Dbus ...	Brass.
Rag ...	Rag ...	Termination of forest land or commencement of grass land.
Rak ...	Rag ...	Great open clean place.
Tak po chhi ...	Dag p Chhi ...	A wild cow of the hot country, <i>i.e.</i> , of the plains.
Ba mon ...	Bamon ...	Cow.
Ba ...	R ...	Pearl.
Mütig ...	Mutig ...	Milk.
Wom ...	Ahom ...	Buddha (Gautama).
Sangia ...	Sang Gys ...	Zima = fun.
Zima Jong (or Dsong) ...	Gzgs m Szong ...	Salt.
Tehha ...	Tehha ...	Red-hill.
Rima (Rimar) ...	Ri dmar ...	Silk.
Darchendo {	Tar ...	Sort.
	Chen ...	Lower (vale).
	Dho ...	A wide plain, Gis = wide.
Gia-Thang ...	Gy Rgy Thang ...	Range.
Rigo ...	Ri Mgo ...	Pass.
La ...	L ...	Road.
Lam ...	Lam ...	Snowy mountain.
Kangri ...	Gan-ri ...	

*Narrative Account of Phurba's Explorations in Tibet and Bhutān in 1885-86.*

[Explorations in Tibet and Bhutān by Phurba, 1885-86. The author of this narrative accompanied Rinzin Nimgyi as a companion and has contributed the following independent work:—He entered Tibet by the Dza-lep (Jelep) pass and crossed over into Bhutān by the Miru pass: descending thence by the Ha Chu (Hār Chu of Godwin-Austen) he joined Rinzin Nimgyi's route near Batte Dzong, below which he has furnished the route along the range to the west of the Wong Chu to the vicinity of Baxa Duār.]

The explorer having been directed to accompany Rinzin Nimgyi was deputed by him to cross over the Dza-lep (Jelep) and Miru passes, and entering the Ha Chu valley to follow the course of the river Ha (Chu) to its junction with the Wong Chu and there remain until, if possible, the arrival of Rinzin Nimgyi and his party. After engaging baggage carriers and making all necessary arrangements to depart he took leave of Rinzin Nimgyi, and starting from Darjeeling on the 2nd November, 1885, reached the Pashok travellers' bungalow in the afternoon, and halted there for the night.

2. On the 3rd his route took him to the right bank of the Tista river, crossing which by the iron bridge, he continued his march to the bāzār of Kālimpong.

3. On the 4th he resumed his journey and travelled as far as the Pedong bungalow.

4. On the 5th he marched to Chongthāpa bāzār.

5. On the 6th to Chhuzachen village.

6. On the 7th reached Treluk halting place for travellers, where in consequence of heavy rain in the locality, and the fall of much snow on the surrounding mountains which had to be crossed, he was detained for 15 days.

7. On the 23rd, after travelling up an ascent he reached Nāthāng halting place.

8. On the 24th he resumed the ascent and gained the summit of the Dza-lep pass, which he crossed, and then descended to Langrang halting place. The pass of Dza-lep is on the boundary between Sikkim and Tibet and is situated on the same range as those of Thanka La and Cho pass. The explorer learnt since his arrival in British territory that the Tibetans, in spite of the remonstrations of the Sikkim Government, have erected a fort at a place called Lungthu (Lingtu), situated some 20 miles by road from the pass, in the Sikkim territory and have placed 100 soldiers in it for protection of the frontier.

9. On the 25th he left Langrang and descending for several miles, reached Rin-chen-gang village where he spent 11 days in seeking a competent and trustworthy guide, and laying in a stock of provisions.

10. On the 6th December, he crossed the Ammo river near a *mendong*, by a wooden bridge 100 feet long. This river has two main branches, the one flowing from the Thanka La (pass) and the eastern one flowing from the direction of the Chumalhāri range *viā* Phari and Chum-bi. After crossing the bridge he travelled south-east along the river for about 6 miles as far as opposite the village of A-samthāng, and about 3 miles further came to the Lāngmārpo cave on the bank of the small stream of same name and near its junction with the Ammo river, where he stayed the night.

11. Leaving the cave on the morning of the 7th, he continued along the left bank of the river and came to the Lagulung Chu (stream), up which he travelled from its junction with the Ammo river, and stopped for the night in the valley, which is flanked by snowy mountains.

12. On the 8th, after travelling up the Langmar Pochhu or Lagulung Chu (stream) for half the day he arrived at a cattle-shed (*lok*) consisting of 3 houses, situated on a small spur. Numerous head of cattle are kept here and much butter and cheese prepared. The people of this locality are one with those inhabiting the Ha Chu valley. Passing on from the cattle-shed he continued to ascend till crossing a spur he arrived near sunset at a small stream, about a mile distant from a *lapcha* (pile of stones) on the top of the spur, and halted for the night.

13. Rising early on the 9th, he continued the ascent, till he arrived at a rest-house, where some five feet of fresh fallen snow lay on the ground. From the rest-house the explorer travelled about 3 miles higher up, but finding no place to stay in and owing to the great fall of snow, returned to the rest-house and stayed there that night.

14. Half of the following day, the 10th, was occupied in ascending to the Chhu (La) pass, situated over a high spur from the main ridge running down from the Ma-song-chong-drong-ri peak. A small tarn lay to the east of the pass. Pursuing his journey eastwards for about 4 miles, he gained the summit of the Miru pass, situated on the boundary between Tibet and Bhutan and on the range of mountains trending from Chumalhāri, first in a southerly direction and then in a south-easterly direction towards the Tegong pass. Crossing the pass he descended in a south-easterly direction for about 3 miles and reached a rest-house called *donkhim*, at Damthāng, and thence continued to descend along the small stream Damthāng Chu to its junction with the Ha Chu, where the valley was half a mile wide. Still continuing to descend, now along the right bank of the Ha Chu, he reached the large village of Gechukha containing 20 houses and a monastery, where he halted.

15. The villagers of Gechukha questioned him as to the object of his journey and were for detaining the party, demanding the necessary passport, the explorer therefore deemed it expedient to go to the Tumphiong Jongpon in person and obtain his sanction to travel onwards. For this purpose he travelled half-a-day's journey southwards to the Tumphiong Dzong (fort), and the party having presented themselves before the Governor, told him that they were from Sikkim on a pilgrimage to some shrines. In place of giving a decided answer, he told them to return to Gechukha where orders would be sent. Hearing nothing for a couple of days, the explorer losing patience again returned to Tumphiong Dzong on the 13th, but the Governor told him forthwith to return to the village and await his pleasure there. The party remained at Gechukha monastery till the 23rd, when a couple of men from the Jongpon came to conduct them into the presence of the Governor once again. On this occasion he ordered them to go back by the route they had traversed over the Miru pass; and to give effect to his orders, he directed an escort to conduct the party as far as the pass and to see that they went over. Having cajoled the escort into a belief that he would cross the pass and advising them not to trouble themselves further, they left the party at Damthāng and returned. The party continued at this place three days, on the pretence that one of their number was incapacitated from travelling owing to a bad leg, and during this halt matured their plans to travel down the Ha Chu valley instead of re-crossing the Miru pass.

16. Late in the night of the 29th, the explorer left Damthāng and travelling down the stream of that name, and then along the right bank of the Ha Chu, passed Gechukha village, the scene of his former detention, and stayed in the forest off the road the whole of the next day.

17. Leaving their hiding place on the night of the 30th, the party crossed the large Ha bridge to the left bank of the stream and passing several villages on either bank, proceeded along the river as far as opposite Tumphiong Dzong, and then passing that fort, still continued down stream for about 3 miles, and then leaving the bank, ascended a spur to a small winter-deserted village, where they stopped. From Gechukha village to the junction of the Ha and Langbo Chu (streams) the valley is covered with villages, and there is game in abundance.

18. On the 31st of December, after marching several miles the explorer struck the main road from the Tegong pass, and thenceforward in eleven days travelled to Chukha Dzong, by the same road traversed a short time previously by Rinzin Nimgyl. At this place the party was detained fifteen days, and was released only by the orders of the Thimbu Jongpon whose good offices on our behalf had been secured by Rinzin Nimgyl when they were at Buxa Duār. The explorer had written a note to Rinzin Nimgyl from Chhukha, stating the plight that the party was in and he immediately interceded with his friend the Thimbu Jongpon, who, as just stated, ordered their immediate release. The day after the order arrived at Chhukha, the explorer left the place, and after marching for three days joined Rinzin Nimgyl on the 29th January, 1886, at Buxa Duār.

19. While Rinzin Nimgyl was detained at Buxa Duār, he directed Phurba to go back to the junction of the Ha Chu and Wong Chu and carry down a traverse along the range running parallel to the latter on the west. This having been accomplished he was able to leave Buxa Duār with Rinzin Nimgyl on his second journey.

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*Report on Routes by Explorer Hari Ram from (1) Dagmara thāna viā the Dudh Kosi river and Pangula pass to Ting-ri in Tibet; (2) Ting-ri to Kirong viā Jongkha Fort; (3) Kirong viā the Trisūli river to Arughāt on the Buria Gandak; (4) Arughāt to Nubri on the Buria Gandak; and (5) Arughāt viā the Buria Gandak to Deo Ghāt, and thence down the Narayani to Tribeni: compiled by MR. C. WOOD, in 1885-86.*

The explorer was directed to follow up the Dudh Kosi river and thence to reach Ting-ri\*: he was then to turn westwards and find his way by Jongkha Fort to Kirong\* whence he was to travel further westwards till he reached Nubri (near the head-waters of the Buria Gandak); and, following the course of that river, to return to India by Tribenighāt\*. This programme he has succeeded in carrying out with a few unavoidable exceptions, but the want† of hypsometrical observations deprives his route of a place in the first rank of trans-frontier explorations. His route however traverses more than 420 miles of new ground, and, besides tracing the Dudh Kosi to its source, it fills the gap between Ting-ri—Jongkha Fort—Kirong noticed as a desideratum on p. 4—, of Appendix to the Annual Report of the Great Trigonometrical Survey for 1871-72.

2. Having received orders on 12th April 1885 to arrange for his trip, the explorer went to Kumaun to engage companions and servants for the journey, and succeeded in engaging one man of Kumaun and three Dotiāls (Nepālese). He states that on his return to Almora he fell ill, and again at Kāthgodām: he thus lost 2 months, and did not reach Darbhanga till 4th July, to which place two sets of boiling-point thermometers and a second prismatic compass had been sent to await his arrival. Unfortunately one of the boiling-point thermometers was found to have been broken in transit, and had he reported this by telegram a second one could easily have been sent: he however started with only the other boiling-point thermometer and it was not long before he had cause to regret his omission. As he was to travel in the disguise of a *baid* (physician) he here laid in a stock of European and native medicines, besides other articles suitable for presents to officials, &c. Leaving Darbhanga, he reached Jhānjhārpur railway station on the 9th July, and thence made his way by road to Dagmara thāna (in the Bhāgalpur district) the origin of his work, situated about 3 miles south of the Nepāl boundary.

*Dagmara thāna, viā the Dudh Kosi and Pangula pass, to Ting-ri.*

3. 11th July.—Left Dagmara thāna and, passing the Nepāl boundary and several villages *en route*, arrived at *Bhagbatpur thāna*. The thāna is enclosed by a masonry wall, and holds about 250 Nepālese soldiers under the orders of a Colonel: on the west of the thāna is the village of that name which contains about 200 houses. Distance about 9 miles; road good for carts; surrounding land well cultivated.

4. 12th July.—Having obtained a passport after making customary presents, the party proceeded on their way, and arrived at *Janoli* village, passing several villages *en route*. Distance 4½ miles; road, &c. as on previous day.

5. 13th July.—At about 2 miles struck right bank of the Mohoriakhola‡, a gorge about 50 paces in width having water in its main channel to a depth of 1 foot; crossed and recrossed this stream several times till its source was reached at the Mohoria pass on the low range of that name which extends eastwards to Chaunria village distant about 5 miles west of the Kosi. The stream flows away to the east from the point where it was struck. Went down the Bhajia-khola to *Mainagaon* a small village at junction of this stream with the Kamkhola. Distance about 6½ miles; road very rough, not fit for laden ponies.

6. 14th July.—Arrived about midday at Tirjuga village about 700 paces short of the right bank of the Tirjuga (or Tilju) river which is here about 50 paces wide with 3-feet depth of water. The road from Sinduli Garhi to Megzin (on the Kosi) passes through this village. When the river is swollen, small canoes, made of the trunk of the *semal* (*bombax heptaphyllum*) tree hollowed out, are used for crossing; the current being generally moderate. Tax on goods

\* Obligatory points previously well determined. † Even the few boiling-point observations brought back are worthless, as the bulb of the thermometer was not kept free from the bottom of the vessel in which the water was held. ‡ Khola = stream.

NOTE.—The places where the party halted have been printed in this report in *Italics*: and the distances quoted are the horizontal measurements taken from the plot of the explorer's route.

is levied at Tirjuga. The water being low, the explorer's party forded the river and went on to *Asaria* village a little east of the junction of the Barukhola with the Tirjuga. Distance about 7 miles; road good from Mainagaon to the Tirjuga, but thereafter passes through dense jungle which affords good grazing ground in winter for the cattle of owners occupying the high lands to the north.

7. 15th July.—At about  $\frac{1}{2}$  of a mile crossed the Barukhola, a stream about 30 paces wide with 1 foot depth of water and taking its rise in the Mahabarat range: followed this stream, crossing and recrossing it several times, for some 7 or 8 miles, and turning eastwards topped a spur and thence ascended to *Mahuabas* cattle-sheds about 2 miles higher up on the crest of the same spur. Distance  $12\frac{1}{2}$  miles; road very bad and steep.

8. 16th July.—Followed the crest of the same spur and halted at *Bāmangaon* village on the south face of the hill below the crest. Distance  $1\frac{1}{2}$  miles; road very bad and steep.

9. 17th July.—Ascended to the Rautapokhri tarn in a hollow on ridge. This tarn is about 160 paces in length from east to west, and is said to be very deep: the water was very muddy when the explorer passed, but he was informed that it becomes clear in winter and that fish may then be seen in it. This place is held sacred by the inhabitants of Nepāl, and in August large numbers of people resort to it for devotional purposes. From a point on the route 850 paces beyond Rautapokhri, the bearings of several peaks were taken, three of which have been identified with peaks trigonometrically fixed; the route then followed the crest of a spur emanating from Rautapokhri for over a mile and descended along the southern face of a sub-spur, after which it turned to the N.E., and crossing the Rasiakhola stream (width of bed 50 paces, depth of water 2 feet) arrived at the small village of *Bhotiatār*\*, and halted there the next day. The Rasiakhola flows eastwards for about 8 or 9 miles and falls into the Sun Kosi. Distance 6 miles; road bad except in the vicinity of Bhotiatār.

10. 19th July.—Crossed the Khārikhola, a small stream which falls into the Rasiakhola at about 700 yards E. of Bhotiatār village, and then ascended a spur to Bhojiabās village, after which several sub-spurs were crossed till *Yāriḥhanjang* was reached. There is no village here; but it is the resort of cattle owners who frequent the tract for the plentiful supply of grass which it affords. Distance  $5\frac{1}{2}$  miles; road rough.

11. 20th July.—Followed along the crest of a spur for about 5 miles to beyond Morenia village, and then by gentle descent to *Bijutār* village. Distance  $10\frac{1}{2}$  miles; road bad throughout.

12. 21st July.—Continued to descend for about 2 miles to Rāmpurkhola. (a small stream), issuing from the spur at Morenia village and falling into the Yārikhola. At a short distance beyond, the large scattered village of Rāmpur was reached: there is a *chauki* here, and the explorer's passport was examined, his goods searched, and a tax exacted from him. At about a couple of miles further, reached the right bank of the Yārikhola about 1 mile above its junction with the Sun Kosi, and, passing the village of Jadanpur at the great bend in the Sun Kosi, proceeded along the right bank of that river to the small village of *Chibu Tār*. At Chibu Tār the explorer was taxed again, and had to propitiate the official by making suitable presents. The road from Katmandu to Dhankuta *viâ* the Sun Kosi passes through Chibu Tār and Rāmpur. Distance 9 miles; road good enough for laden ponies.

13. 22nd July.—Crossed the Sun Kosi river by a ferry, and kept along the left bank for about  $1\frac{1}{2}$  miles. The explorer estimated the width of this river at 800 paces, and the depth at 12 or 14 feet; and as the river was swollen and the current strong, he had some difficulty in getting across. At about 2 miles topped the Halsiadānda spur (which runs from this point to the N.E. for several miles about parallel with the explorer's route at a distance of 3 or 4 miles) to the small village of *Jhābagaon*. Distance  $4\frac{1}{2}$  miles; road bad, not fit for laden ponies.

14. 23rd July.—Proceeded northwards and struck the Dudh Kosi opposite Khumbutār village; continued along its left bank to Jairamghāt where after payment of a tax the river was crossed by a ferry. It was here about 50 paces wide, and had a depth of about 13 or 14 feet: the bed was rocky and the stream was a very noisy torrent. Fish are found and netted in plenty; and in places the signs of gold washing were met with though the explorer did not see the process in work. Continued along the right bank of the river, and halted for the night in a ruined hut. Distance  $4\frac{1}{2}$  miles; road very bad all along.

15. 24th July.—Followed a track parallel to the Dudh Kosi (which runs in a very tortuous course for a couple of miles) to Majhigaon a fishermen's village; ferried across the river to *Bilungtārghāt* chauki through which the great military road from Katmandu *viâ* Okhaldonga thāna and Halsia Mahādeo temple (on the spur noticed under date the 22nd)

\* Tār = level ground on bank of river.

passes on to Dhankuta. This temple is thought much of in the neighbourhood, and a free grant of land valued at Rs. 3,000 per annum has been assigned by the Nepāl Government towards its support: the temple is annually visited in August by men from the surrounding country for the celebration of religious observances. At Bilungtārgghāt chauki the usual tax was levied on the explorer's goods. Distance 3 miles; road moderately level but too rough for ponies. [From Bilungtārgghāt the explorer detached his companion to traverse up to Halsia Mahādeo temple. Distance 3½ miles; road good, and continues so as far as Bhojpur thāna distant about 25 miles to the E.].

16. 25th July.—Followed a track along the left bank of the Dudh Kosi to some cattle-sheds situated near the point where this river is met by the Rakhola. This stream is here crossed by a wooden bridge 30 paces long, the depth of the water being about 7 or 8 feet: it waters an extensive valley which is highly cultivated on both banks of the stream and produces sufficient rice for export to the northernmost limits of Nepāl. Distance 4 miles; road pretty good in parts, in others very rough. The explorer's boiling-point thermometer broke on this march owing to an awkward fall of one of his men in which the hollowed walking stick used for carrying the thermometer snapped.

17. 26th July.—Crossed the Rakhola and, ascending and descending spurs, reached *Dumri* village (of about 40 houses) about a mile below and east of Dumrigarhi fort. The fort has mud walls, and is occupied by 8 or 10 men, servants of the official who farms the revenues of the Rakhola patti. Distance 2½ miles; road too rough for ponies.

18. 27th July.—Proceeded about 2½ miles along the eastern face of the spur on which Dumrigarhi stands, and then ascended and went along it to the fort of *Aisalu-kharka*. Distance 4 miles; road bad in parts. A copper mine (now in operation) is distant about 8 or 9 miles W.N.W. of Aisalu-kharka. This fort is held by 400 Nepālese soldiers under a Captain whose duty it is to examine all passes brought by travellers from the south, and after full enquiry to grant fresh ones to those proceeding further north. The pass which the explorer obtained at Bhagbatpur thāna entitled him to travel in Nepāl: but as it was known that he intended proceeding northwards into Tibet, he was closely searched, interrogated, and directed to return by the way he came, the soldiers being ordered to keep him under surveillance for such time as he remained there. After a compulsory stay of 6 days, the explorer was able, by making suitable presents, to obtain permission to proceed, having persuaded the official to credit his statement that he and his party were inhabitants of Jumla and that they were anxious to return thither by Ting-ri, Jongkha Fort, and Kāgbeni, as being the most expeditious route.

19. 3rd August.—Traversed the crest and eastern side of the spur in a north-easterly direction, and then turned north-west, after which descended and, crossing the Dūdikhola, halted at the large village of *Lokhim*. Distance 8 miles; road bad throughout.

20. 4th August.—Crossed a sub-spur and descended to the Hungukhola (a considerable stream), which rises in the snows about 15 miles to the N.E., and falls into the Dudh Kosi at about a mile below the point where the route struck it. The stream is 47 paces wide, and has 8 or 9 feet depth of water: it is spanned by a wooden bridge. Ascended another spur, and descended to the Yūkhukhola which comes from the same snows as the former stream and like it has a wooden bridge across it: its width however is only 30 paces and depth 7 or 8 feet. Halted for the night at *Chochim* village 300 paces to the right of the road. Distance 3½ miles; road very bad.

21. 5th August.—Proceeded parallel to the course of the Dudh Kosi, at about 1 mile distance from it, to *Waksa* village, the northern of two bearing the same name. Distance 2½ miles; road bad.

22. 6th August.—Kept pretty parallel to the Dudh Kosi, and, crossing three small streams from the N.E., halted at the scattered village of *Jubang* situated nearly 1½ miles E. of the junction of the Khumbu Chāngbo (*Tibetan*) or Bhotiakosi (*Nepālese*) with the Dudh Kosi. The latter river rises in the Dudh Kund\* lake (distant about 8 miles to the N.W. of the junction just referred to) which is said to be about 9 miles in circumference, and derives its name from the whitish (milky) appearance of its water. The lake is largely resorted to in August, both by the Nepālese and Tibetans, for the performance of religious ablutions, &c. Snow-covered mountains were seen overhanging the western and northern sides of the lake. The hills on the western side of the Dudh Kosi from Waksa to Jubang are extensively cultivated; and large flocks of goats, sheep and yaks find pasture on the slopes of the spurs which run eastwards to the river. Jubang is the first village where Tibetan inhabitants were met by the explorer, and beyond this no Nepālese were seen. At this village too the grass-covered huts of the south give place to shingle-roofed ones, and this style of roofing was exclusively found for some 30 miles to the north. Distance 3 miles; road not fit for ponies.

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\* Called *Humichho* (= milky lake) by the Tibetans.



23. 7th August.—Followed track along western slope of a spur, and after crossing three streams and their intermediate spurs halted at a hamlet (consisting only of a couple of huts) called *Paia*. Snow-covered mountains were seen at about 5 miles to the east of this spot. Distance 7 miles; road very bad.

24. 8th August.—Crossed several streams, and passed through the large village of Chauriak<sup>\*</sup> to the left bank of the Kusham Chāngbo: this was crossed by a wooden bridge 27 paces long (depth of stream 4 feet), after which at about  $\frac{1}{4}$  of a mile the Khumbu Chāngbo was reached. This river is spanned by a wooden bridge 50 paces in length, the volume of water being about 16 paces in width and 7 or 8 feet in depth. Halted at the moderate-sized village of *Lobang*, situated at 300 paces to the west of the route, from which place a pretty good road goes S.W. to Okhaldonga. Distance 6 miles; road bad as far as Chauriak<sup>\*</sup>, but practicable thereafter for laden yaks.

25. 9th and 10th August.—Proceeded for about 2 miles at a short distance from right bank of the Khumbu Chāngbo, when being overtaken by a heavy fall of rain, the explorer's party had to call a halt for the night in a cave which opportunely offered a friendly shelter. Started next morning and crossed the Khumbu Chāngbo at about  $\frac{1}{4}$  mile, by a wooden bridge (about 30 paces long), a little beyond which the Lobang Chāngbo joins it. This latter takes its rise about 8 miles to the E. by S. in the Gumchho, a frozen lake of about 8 miles in circumference. After passing across a bridge over the Lobang Chāngbo, and two others at an angle of the river, ascended to *Nabjia* village. Distance 6 miles. This is the largest of twelve villages which comprise the Khumbu pattī†, and is the chief resort of traders both from the north and south. The village consists of about 50 houses, and the inhabitants are more well-to-do than those of any village that the explorer passed through from Dagmara thāns to Ting-ri. A little higher up than the first bridge at the angle in the river above referred to, is the confluence of the two main heads of the Khumbu Chāngbo. These contain about an equal volume of water, and are named the Thāmi Chāngbo and the Pāngu Chāngbo. The former rises in a spring a little below a very deep lake about 12 miles to the N.N.W., and the latter at some 15 or 16 miles distance in the snow-clad mountains to the N.E. From the northern face of the southern watershed of the Pāngu Chāngbo, two or three small glaciers descend to some distance above the bed of the stream. Along the valley of the Pāngu Chāngbo, and over a main spur of the Himalayas there was till 30 years ago a fair road to the Arunkosi: but owing to an outbreak of virulent small-pox having been brought over from the east—which carried off a large number of the inhabitants of Khumbu—the road was closed, and it is now completely lost. From Nabjia northwards the valley of the Thāmi Chāngbo is very contracted. About 2 miles north of Nabjia and on a flat part of a spur, is Khumbu Dzong, the residence of the Governor of the Khumbu district. This official is a Tibetan, and has held the post for the last 30 years: he receives no pay from the Nepāl Government, but is allowed 15 per cent of the nett revenue of the district. The explorer was told that he pays an annual visit to Kātmāndu.

26. The Governor for some time absolutely refused the party permission to proceed northwards by a route which he alleged had never till then been traversed by any Hindustani or Gurkha. The explorer had therefore to make a lengthened stay at this place, during which time he endeavoured to ingratiate himself with the inhabitants by treating their sick. One of the commonest diseases in the locality was goitre, and as he succeeded in curing the Governor's daughter-in-law of this he was naturally taken into favor, and secured the sympathies of her husband Sunnam Durje. This last-named individual was about starting on a trading expedition to the north, and by the exercise of sufficient tact was prevailed on to take the explorer's party in his train. The man eventually gained his father's tacit consent to the arrangement, and after a six-weeks' enforced inactivity the explorer again started on his way.

27. 22nd September.—There are a few villages in the valley for about 5 miles beyond Nabjia, but at Taran the last of them the limit of tree vegetation is reached, and the explorer had therefore to take 2 yak-loads of firewood with him before leaving Khumbu Dzong. It may be mentioned here that from Jubang to Taran, barley and currants (black and red) are grown in tolerable plenty; but that south of this (with the exception of the Rakhola valley in which rice is grown as stated under date 25th July) down to the Mohoria pass (*see* 13th July) there is no crop other than Indian corn (*makai*): a little cotton is occasionally to be met with south of Aisalu-Kharka. The explorer's party, having twice crossed the Thāmi Chāngbo by wooden bridges and passed Taran village, followed up the left bank of the stream and halted for the night in the open. Distance about 10 miles; road very bad above Taran village.

28. 23rd September.—After proceeding about a mile and wading across the Thāmi Chāngbo, the spring from which the stream issues was seen at a short distance to the east.

\* *Khark* (Nepālese) = *Dhong* (Tibetan) = Cattle-shed.

† For signification *see* Vocabulary towards the end of this report.

A detour was made till the south-east end of the tarn (about 800 paces in length) was reached: the path then skirted the margin, and after leaving the N.W. edge ascended a narrow gorge for more than 2 miles to *Pangji dharmaāla* (rest-house). The party first met a snow fall on this march, and for some days after had a rough time of it. From Pangji, at a distance of about 300 paces to the N.E., the famous deity Tākdeo (literally horse-god) can be seen standing on the summit of an inaccessible spur: it is a black rock, in shape like a horse and of about the proportions of an elephant. The explorer says that from the impracticability of the approaches to the spot, he is convinced that the Tākdeo is not an artificial production: the resemblance, however, he testifies to as being a perfect one. The place is considered very sacred by the Tibetans, and it is a necessary religious observance for the lamas of Lhāsa to repair to the locality once every 4 years and pay their respects to this deity. Out of deference to Tākdeo, no ponies are allowed on the route between Taran village on the south and Keprāk village on the north of the pass. At Pangji the explorer came up with a large party of traders with their yaks on the way to Ting-ri, and he was glad of their company for the morrow when the pass was to be faced. Distance 10 miles; road very rocky and bad.

29. 24th September.—Starting at day-break, and feeling their way over the snowbed, which was extremely dangerous work owing to the numerous clefts met with—occasionally covered over with recently fallen snow,—the party after a toilsome ascent of 5 or 6 hours reached the summit of the pass. On the march from Pangji to the pass the gorge is extremely contracted, and large masses of rock brought down by snow-action from the heights on either side are to be met with in the valley poised like capitals on pillars of frozen snow about 30 or 40 feet in circumference and 20 to 30 feet in height. This phenomenon the explorer says he has nowhere else met with in his extensive travels over snow-clad districts. As to the pass he says it is decidedly the highest and the most formidable one he has ever crossed: he estimates the height at over 20,000 feet, and it is a very great pity that no accurate value of it is forthcoming. From about 8 to 10 miles N. and S. of the pass, the explorer took bearings to a peak to the E. on the ridge which has been identified as Colonel Tanner's peak No. 42, the position and height of which have yet to be finally computed. The pass is named the Pāngula: on it is erected the usual cairn of stones, with small flags stuck therein and the horns of goats and yaks laid over, so often met with on passes in Tibet. The ridge now forms the boundary between Tibet and Nepāl. After a half-hour's halt on the pass, the party started northwards down a bed of snow lying in a narrow gorge, and as the sun's power was now taking effect on the fresh snow the passage proved extremely fatiguing; the gorge then widens and the water of the Keprāk river becomes visible in a stream which comes down from the S.W. with another small one from the east: the explorer believes that the head-waters of this stream are at the pass, flowing under the snowbed he passed over. The route then runs parallel with the Keprāk river and at a short distance above it along the snow-covered mountain-side to the east for some 3 miles till it reaches Keprāk village and chauki: along this part the explorer saw the results of huge avalanches which had come down from both sides into the gorge, forming natural arcades here and there through which the sluggish stream of the Keprāk river finds its way. Distance 12½ miles; road extremely difficult and dangerous. The *gyāngpa* (chief village official) of Keprāk is subordinate to the *daipon* (provincial governor) of Ting-ri; and he at first refused the explorer's party permission to proceed northwards, stating that any such concession would cost him his life: he however said that as the party had come in company with Sunnam Durje (the Khumbu governor's son), they would in deference to him be hospitably entertained pending a reference to the *daipon*. On the fourth day, orders were received from Ting-ri forbidding the party to advance; but a little diplomacy gained the co-operation of the *gyāngpa* who next day with Sunnam Durje started for Ting-ri to wait on the *daipon*. After some days, a messenger arrived to say that permission had been granted and two days later the *gyāngpa* himself returned and arranged for a guide to accompany the party to Ting-ri. From Keprāk there is a good route *riā* Phalāk (or Rungshār) and the Tāmbakosi valley to Sindhuli Garhi. During the stay of the party at Keprāk there was a good deal of rainy weather and very heavy falls of snow occurred on two days.

30. 8th October.—Starting from Keprāk, the route continued along the mountain-side, with snow lying in parts, for about 5 miles, when it descended and crossed the Keprāk river by a wooden bridge, about a mile beyond which it ascended again till the crest of the last spur (running nearly east and west) on this route was reached. North of the point where the Keprāk river was crossed there is practically no snow on the mountains. Descending the northern face of the spur the party entered the grassy plain known as the Ting-ri Maidan\*, across which there is no path, but the traveller makes for a conspicuous flat-topped solitary hill which rising from a triangular base (about 3 miles round) attains a height of about 300 feet. The party stopped for the night about 3 miles short of the hill. Distance 16 miles; road good.

\* This is locally called Ghangār; by the Nepālese it is known as Tiglimaidān; while the Lhāsa people speak of it as Dhangri Ghangār (*Ghangār* in Tibetan meaning plain).

31. 9th October.—The isolated hill standing at some 400 paces to the west, was passed about 8 o'clock, and the party then proceeded, keeping in view the hill on which the Ting-ri fort stands. The town of Ting-ri at the base of the hill was reached in the afternoon, and the party occupied the hut which Sunnam Durje had secured for them. Distance 10 miles; road very good.

32. The town of Ting-ri consists of about 250 houses, and the inhabitants are chiefly Tibetans: there are, however, five houses belonging to Gurkhas and three or four to Chinamen who have established themselves at this place for trading purposes. The houses are all stone-built, a tenacious clay of whitish color being used in place of mortar. The roofs are all flat; the larger timber consists of pine logs brought chiefly from Phalāk and Nilam; on this lighter pine rafters are laid, which are superposed by a layer of strong furze locally called *dīma* found in large quantities in the neighbouring slopes; a layer of wet mud, from 4 to 8 inches in depth according to the calibre of the supporting timber, is thrown over and well rammed. This affords a waterproof roof; but when the snow lays thick it has to be pushed off to prevent the timbers from sagging under its weight. The country immediately round Ting-ri is well cultivated, barley and pease being however the only produce. The inhabitants all appear well-to-do, but they seem to suffer a good deal from rheumatism caused no doubt by the intense cold in winter due to the altitude (13,860 feet) of the place and its proximity to the Phangju Chāngbo (or Ting-ri Chāngbo) river and the piercing winds which sweep over the plain. On the hill, which rises immediately from the north of the town to a height of about 300 feet, stands the stone-built fort which is occupied by the *daipon* and 40 Chinese military officers who are in command of about 500 Tibetan soldiers. The *daipon* is relieved once in 3 years, and during his tenure of office is allowed to trade within the limits of his province. There are said to be only three *daipons* in all under the Lhāsa government: of these, one resides in Lhāsa, another in the Namchho district, and the third at Ting-ri. The authority of the last-mentioned extends from Sa-kya to the westernmost limits of Tibet, and he exercises both military and civil jurisdiction, short of capital punishment, within his territory. The trade in which the *daipon* engages, so far as tea and salt are concerned, cannot be characterized as free: the former of these his servants and agents purchase in large quantities at Darchendo, and the latter in the Thok Jūlung district. These articles, the men of the district are compelled to take over (in preference to purchasing from traders), giving, in return from the salt an equal weight of barley, and for the tea at 16 *naktīngs* (a coin consisting of about equal parts of silver and copper, valued at a half-rupee) per brick (*dum*). The tea which the *daipon* deals in is of the middling quality (known as *Chunja*) which can be had from traders at 8 *naktīngs* per brick; and as each house in his jurisdiction is compelled to take one brick yearly from the *daipon* at the rate fixed by him, he realizes a large annual revenue under this head. But as regards the salt, by taking over an equal weight of barley in exchange for it, he gains in seasons when corn is scarce, but loses when it is plentiful, for in the former the market value of corn to salt is 4 to 3 while in the latter it is 4 to 5 or 6 according to the season's yield. In addition to these two articles, he deals in blankets on the same footing as private traders.

33. The inhabitants are all Buddhists, whose social and religious customs &c. have been described in detail in the account of Pandit Kishen Singh's explorations and previous reports.

34. No gold is to be seen at Ting-ri; it is however much sought after, and as the explorer had gone there from the south many were the enquiries made of him as to whether he had any gold (or pearls or coral) to dispose of.

35. The climate must be very severe in winter, as it is said that the Ting-ri Chāngbo is frozen over for 3 or 4 months. When the explorer was there, the Keprāk river, which flows immediately to the east of the city and has a volume of water about 20 to 25 paces across and 1 foot depth, used to remain frozen till about 8 A.M.

36. The soldiers occupying the Ting-ri fort are armed with a sword, matchlock, and bow and arrows. The sword is the usual short straight weapon (in wooden scabbard) met with all over Tibet; the matchlocks are sent from Lhāsa; and the bows are made of bamboo which is brought in from Nepāl. The soldiers manufacture their own powder on the spot. Lead is imported from Nepāl and Darjeeling; but as the soldiers have no bullet-moulds they pour out the molten lead into a long hollow scoop in the ground, and then clip it into convenient-sized pieces which are hammered to suit the bores of their guns. They receive a small yearly pay (about 40 or 50 *naktīngs*, i.e., 20 to 25 Rs.), but they are allowed to engage in agriculture, trade, &c. They are drilled by their Chinese officers every week or so (sometimes on foot, at others mounted on ponies which they maintain for themselves), and there are periodic inspections by the *daipon*. At these inspections, the soldiers always appear mounted in uniform and have to go through target practice. For the latter a disc of leather (1 foot in diameter) painted white is suspended to a rope stretched across two poles: each soldier in turn then rides full gallop across the field at about 15 feet from the target, and fires as he goes past: should he hit the mark, his officer who is in attendance with the *daipon* scores a point. When all the soldiers have gone past in one

direction, they return firing in the same way as they go past the target, to their original position. They next go through the same course using their bows and arrows instead of matchlocks. The *daipon* then examines the notes of each officer, and for every point scored presents him with a *khatāg*\* after which the company is dismissed. The explorer was not much impressed with the marksmanship he saw, for not more than 50 or 60 *khatāgs* represented the nett result of the shooting.

37. As Ting-ri is situated on the high-road from Lhāsa westwards, it is the constant resort of traders for whose convenience a *serai* capable of accommodating a couple of hundred men has been built at about 500 paces to the north of the Ting-ri hill. The bulk of the goods is carried on mules, chiefly because they travel so much faster than either yaks or asses. A good burthen-mule (called *tīu*) is valued at about 70 or 80 Rs., while a good riding-animal (called *gyatiu*) costs five or six times as much.

38. *Trade.* In the part of the country traversed by the explorer from Bhāgalpur to Ting-ri, the chief articles carried northwards are tobacco-leaf, cotton cloth, broadcloth, iron, brass and copper vessels, corals, and rupees which are used for making jewelry: for these the men of Khumbu go annually in parties to India—some even as far as Calcutta—taking with them musk-pods, yak-tails, antelope-horns, blankets and stuffed *munāl* and argus pheasants. A portion of the imports is disposed of in Khumbu, and the rest is taken on to Ting-ri. In addition to the foregoing, small quantities of salt and rice are imported from India, but these do not go much beyond the Mahabarat range; also oil, which finds its way as far north as Khumbu.

39. From Ting-ri are exported into Nepāl, Tibetan blankets, musk-pods, goats, ponies, *ghee* (clarified butter) and yak-tails. All the *pashm* (wool) which the tract yields is collected and bought up by the trading representative (*Jungchhongpan*) of the Lhāsa government who goes every two or three years to Ladākh for trading purposes.

40. *Produce.* The country northwards from the Mohoriakhola to Ting-ri (excepting the Rakhola valley which produces an abundant rice-crop) is extremely unproductive, the only grain grown being maize or Indian corn. Cotton is grown in small quantity as far north as Aisalu-kharka, and here and there in the southern parts a little *til* (sesamum) is to be seen.

41. Of domestic animals, buffaloes are to be met with as far as Aisalu-kharka; but fowls, pigs, and goats are bred and kept in every village as far north as Jubang. At Jubang and northwards are met large herds of yaks, *zobus* (cross-breed between yak and cow), goats, and sheep of the long-horned species so largely used in Tibet for transport purposes. The yak and the *zomu* (female of *zobu*) afford a plentiful supply of milk.

42. *Fauna.* South of Khumbu, impeyan (*lophophorus impeyanus* or *munāl*) and argus (*ceriornis satyra*) pheasants are met with in large numbers, and these are snared and shot by the villagers. Musk-deer (*moschus moschiferus*), *thār* (*hemitragus jemblaicus*), and *gurrāl* (*nemorhædus goral*) are occasionally met with. In the neighbourhood of Khumbu, the Himalayan and Alpine choughs (*fregilus Himalayanus* and *pyrrhocorax Alpinus*) are to be seen in numbers. In the Ting-ri Maidan, large herds of *kyāngs* (*equus hemionus* or *kyang*) and Tibetan antelopes (*antilopus Hodgsonii*, called by the natives *cho*) may be seen roving at will: the latter are sometimes shot by the inhabitants; but with their indifferent guns the sportsmen's chances of success are poor. Flocks of wild pigeons and of the large raven (*corvus corax* or *Tibetanus*) are found in the vicinity of Ting-ri.

43. *Flora.* On the Mohoria range (which corresponds to the Sewālīks of the western Himalayas) and in the valley to the north, the *sāl* (*shorea robusta*) grows luxuriantly: *tunn* (*cedrela toona*), *dhāk* (*butea frondosa*), *semal* (*bombax heptaphyllum*) and *jāman* (*eugenia jambolana*) are also to be met with. On the Mahabarat range, oaks, rhododendrons, mountain pear (*pyrus variolosa* or *lanata*), cherry (*cerasus padam*) and other denizens of a medium altitude grow in profusion. In the valley of the Sun Kosi, the *sāl* is again met, as also the tall bamboo, *pipāl* (*ficus religiosa*) and *semal* (*bombax heptaphyllum*); but the trees grow sparsely in this locality. The mountain-sides from Dumri to Jubang are well wooded with oak, rhododendron, and occasionally fir, with an undergrowth of *ringāl* (thin mountain-bamboo): and the higher elevations to the west of Jubang are densely covered with *deodiār* (*pinus deodara*). From a few miles north of Jubang to Khumbu Dzong, the lower parts of the mountain-sides are thickly wooded with a very large species of oak (probably *quercus dilatata* called *riāns* by the Nepālese), birch (*betula bhajpatra*), pine (*abies webbiana*, called *rāīndiār* by the natives, and corresponding in shape to the specimens of this magnificent tree met with in the Western Himalayas), and stunted rhododendron (either *anthopogon* or *lepidotum* which are known to attain the highest altitudes),

\* *Khatāgs* are small silken handkerchiefs, varying in size and value, which are brought from China and are extensively used throughout Tibet for presentation. Those given by the *daipon* to the Chinese officers are of the cheapest kind valued at about 2 annas.

with a dense undergrowth of *ringāl* jungle: for 4 or 5 miles beyond Khumbu the pine may be seen skirting the bed of the river and the rhododendron for another 4 or 5 miles further up, with a few bushes of the Tibetan furze. After this, not a tree is to be seen, and till the suburbs of Ting-ri are reached the only vegetation met with is the short grass found in the maidān and the stunted furze on the hill sides. The furze met with is of three kinds, two of which are probably the *caragana gerardiana* and *versicolor*; the third is a thorny species of *astragalus*: the leaves and legumes of all these furnish excellent fodder for smaller cattle.

44. The *daipon* was away at She-kar Dzong when the explorer's party reached Ting-ri, and did not return till the 21st October. On the 22nd he was interviewed by the explorer accompanied by Sunnam Durje. The latter descanted somewhat too eloquently on the saintly qualities of his companion the holy Brahmin, and the *daipon* grew suspicious that he must have been bribed to make so strong a case for a stranger. The explorer solemnly protested against having given any bribe, but declared that he had cured Sunnam's wife of a very bad goitre and had thus enlisted his sympathies. The *daipon* was evidently a man not difficult to persuade; and the explorer, producing passports that had been granted to him in former years for trading in Nepāl and Tibet, readily succeeded in convincing him that he was really an inhabitant of Jumla and begged permission to get home by the shortest possible route which was *viā* Jongkha fort and Nubri. The *daipon* declared that this route was absolutely closed to all but officials, traders going westwards and others being compelled either to take the southerly route *viā* Nilam or the northerly one across the Brahmaputra through Dokthol (along the route traversed by Pandit Nain Singh in 1865-66). However, in consideration of Sunnam Durje offering to accompany the party as far as Jongkha fort and be answerable for their good behaviour, the *daipon* on 24th October granted the desired permission; and, ostensibly to afford assistance and protection but really to guard against the explorer changing his direction, he gave orders that from village to village a guide should escort the party and send back regular reports of the progress made.

#### Ting-ri, *viā* Jongkha fort, Kirong, and Arughāt, to Nubri and Tribeni.

45. 25th October 1885.—Left Ting-ri at 7 A.M., and, passing Tokchhu village, at about 4½ miles reached the right bank of the Phangju Changbo (the name of the Ting-ri Changbo westwards of Ting-ri), and at about 2 miles onwards noticed that spurs coming down from the northern and southern ranges reached to within half a mile of the bed: passed Chhamda village where there is a chauki, and at a mile or so further on came to a hot spring\* in a good-sized pool; the water was too hot to allow of the hand being immersed in it, and had a sulphurous smell. The spring has a high reputation for being possessed of curative properties, and invalids suffering from rheumatism and other diseases come from long distances to avail themselves of its medicinal waters. Route kept parallel with the right bank of the river, and the party halted for the night at the small village of *Dakcho*. The villages on this march and on the route followed during the next two days to Makpa grow luxuriant crops of barley†, pease‡, and turnips§, which were being reaped when the explorer passed through. The valley from Chhamda for about 25 miles onwards shows abundant signs of having once been very largely populated; but it is said that in the last great war between the Nepālese and Tibetans most of the inhabitants were killed and the place now lies almost deserted. Distance 11½ miles; road good throughout.

46. 26th October.—Continued alongside of the river passing Nilum|| and Gunjo villages to the junction of the Phangju Changbo with the Makpa Chāngbo; forded the latter (which is only about 2 feet deep and about 15 paces wide) to the left bank whence a road leads northwards to Rā-ga Ta-sam (on the route from Shigātse to Manasarowar). Followed up the left bank of the river to the large village of Makpamau, and thence to *Puri* village. Distance 20 miles; road good throughout.

47. 27th October.—Continued along the river as yesterday, and, passing the small villages of Simi and Tokchhu after which the valley became extremely contracted, reached *Makpa*, a village of about 20 houses surrounded by a walled enclosure 10 or 12 feet in height. The *gyāngpa* of this place examines all passports. Distance 10 miles; road good throughout.

48. 28th October.—Started before daybreak and continued along the left bank of the Makpa Chāngbo to the foot of the spur descending from the Lungola (Tsong La) pass (snow-covered). Ascended the spur and noticed that the great Himalaya range to the south all the way from Ting-ri was well covered with snow. Descended and pushed on, from fear of robbers who infest

\* *Chhuchhān* (Tibetan).

† *Neh* (Tibetan).

‡ *Tāma* (Tibetan).

§ *Libūn* (Tibetan).

|| From here a bearing was observed to the Gela peak across the Brahmaputra which for the entire portion that was visible was covered with snow.

this locality, through the Digunthanka plain to *Digur* village and post-chauki where a halt for the night was made. From *Digur* a winter-road leads down to *Kirong*. In the north of the Digunthanka plain, is the large village of *Pungro*, the residence of a *rāja*. The plain, which on the east of *Digur* extends some 7 or 8 miles on both sides of the road, affords abundant pasturage for large herds of cattle, ponies, yaks, sheep, and goats, which are brought there to graze from so far north as the *Dokthol* province. The graziers (known as *Dokpas*\*) all dwell in black tents, and, in addition to their lawful calling, practise the vocation of robbers at which they are said to be adepts. A small party of them was sighted by the explorer, but on the discharge by him of a few shots they moved off. The spur bounding the Digunthanka plain to the north has a russet hue. Distance 26½ miles; road good throughout.

49. 29th October.—At 3 miles reached the left bank of the *Pungrochu* stream (which falls into the S.E. corner of the *Pālgutso* lake) and continued along it till it turns north-westwards; after leaving it the party pushed on over a sandy tract to the S.W. corner of the lake where a halt was made for the night. The plain extended as yesterday to the south of the road, the *Pālgutso* (lake) occupying the ground to the north. The lake lies east and west and is about 9 miles across in its longest part, the greatest width being estimated at 4 miles. The explorer was informed by his escort that this lake has no outlet; and so far as he could judge it appeared to be completely embayed by mountains, the spurs from the north descending to near its edge. The explorer asserts that there were no indications of the water having at any previous period occupied a sensibly higher level than it does, though of course signs were not wanting of the slightly increased height to which the water attains when its feeders are swollen by the melting of the surrounding snows in summer. The water is clear and sweet, and some small fish were seen in it. Distance 18 miles; road good throughout.

50. 30th October.—Shortly after starting entered a narrow gorge (whence a road leads northwards to *Dokthol*) and followed it up to the *Chharkiu* pass, the last two miles being over snow. From the pass a snow-clad peak of considerable height (probably the *Harkiang* peak near *Sarka Ta-sam* across the *Brahmaputra*) was observed to the N.N.W. at an estimated distance of 40 miles; in the valley below, to the N.N.E. and at a distance of about 2½ miles, a small lake 3 or 4 miles in circumference was seen, while further on in the same direction a range partially snow-covered, coming from the east, extended westwards past the direction of the peak just referred to. Descended westwards over the snow along a ravine, and then ascended a spur and proceeding along the crest again descended to the base where two watercourses met; crossed the northern watercourse and went along the right bank of the combined stream to *Jongkha* fort. Distance 20½ miles; road bad throughout.

51. The fort of *Jongkha* is situated at the junction of the *Satu Chāngbo* (from the W.N.W.) and the stream from the E. along which the explorer travelled: it is about 400 paces square and is surrounded by a mud-and-stone wall about 5 feet thick and 20 to 25 feet in height with loop-holes all round. Along the interior of the fort wall and at a height of about 8 feet below its summit a landing is carried to serve as a foothold for the defenders. Two officials called *Jongpons* (Tibetan = governor of a district) reside here: they usually hold office for three years, and are relieved from *Lhāsa*. They exercise civil and judicial authority, short of capital punishment, in their district: this extends eastwards as far as *Digur* village; westwards and northwards for a distance of about 10 miles; and southwards for about 20 miles. Within the fort is a *Gom-pa* (lamaserai) which holds about 100 lamas. There are also some 15 or 20 shops belonging to *Newārs* (the trading sect in *Nepāl*), and some 50 houses belonging to Tibetans: altogether, the explorer estimated the number of the inhabitants at 5 to 600. From *Jongkha* fort a road leads northwest to *Tra-dom*, and another westwards *viā* the *Satu Chāngbo* to *Nubri*. The country for about a mile or two to the north of *Jongkha* fort appeared well cultivated, and the inhabitants were reaping their harvest at the time. The *Jongpons* having examined the explorer's passport, in keeping therewith gave permission for the party to proceed to *Nubri viā* the latter route: this however was reported to be closed by heavy falls of snow some way ahead. The party was therefore detained until the explorer, by making liberal presents, succeeded in ingratiating himself with these officials, who were eventually persuaded to exchange the original passport (which had been granted by the *daipon* of *Ting-ri*) for another which would carry the party as far south as *Kirong*. At *Jongkha* fort the explorer took leave of his friend *Sunnam Durje* but for whose friendly offices he feels sure he never could have got beyond *Khumbu*.

52. 3rd November.—Leaving *Jongkha* fort the route continued about parallel to the left bank of the *Jongkha Chāngbo*, and at from ½ to 1 mile therefrom, till the post-station of *Dāmdoe* was reached. The route then kept close to the river (which was crossed and recrossed on this day's march by wooden bridges) and, passing *en route* the post-stations of *Hurma* and *Tashirāk*, the party halted for the night at *Gunda* post-station. The river flows through a very

\* *Dok* = black tent, *pa* = they of.

narrow gorge all the way from Dāmdoe and continues so till the hamlet of Rakma (about 9 miles above Kirong) is reached: no cultivation is to be met with all this way. The river at Gunda is about 20 paces wide with  $2\frac{1}{2}$  feet depth of water. Distance 17 miles; road pretty good.

53. 4th November.—Route lay along the river which was crossed and recrossed (by wooden bridges) several times passing Gunda hamlet (most probably Nain Singh's Sangda) till *Todāng* hamlet and post-house (on both sides of the river) was reached. From a little north of *Todāng* a glacier was seen between two spurs; and as the party was passing, an immense avalanche was hurled down with a tremendous reverberation loud enough, it is supposed by the explorer, to have been heard at Kirong. Distance  $12\frac{1}{2}$  miles; road as yesterday.

54. 5th November.—Continued along left bank of the river past a chauki (toll and post-house) and Rakma village (which lies on the *right* bank of the river in the angle formed by a stream from the north-west) to the large village of *Pangsang*. From about 300 paces before Pangsang was reached the snow-clad peaks of Gosainthan and Dayabhang were seen and observed to. Since leaving Jongkha fort cultivation was for the first time seen at Rakma; below this village the valley opens out to the east and is pretty extensively cultivated from about a mile north of Pangsang. At Pangsang, besides barley and turnips, potatoes are largely grown. On the mountain-sides west of the river two or three villages were seen. Distance  $9\frac{1}{2}$  miles; road good.

55. 6th November.—Proceeded parallel to the river, crossing a small stream from the north, to *Kirong*. Distance  $3\frac{1}{2}$  miles; road good. Kirong is a small scattered town\*, larger than Jongkha fort, and contains besides the houses of the agriculturists about 25 houses belonging to *Newārs* (Nepālese traders). It is the residence of two *Jongpons* who exercise joint jurisdiction within their district. The houses are all stone-built, gable-roofed, and shingle-covered†. Passports have to be delivered and renewed here, for which the party had to halt four days in consequence of one of the *Jongpons* being away at a medicinal hot spring distant about  $2\frac{1}{2}$  miles to the S.E. The view from Kirong is said by the explorer to be very contracted.

56. 11th November.—Continued in an easterly direction and ascended a spur on which a little tarn was met; then descended and fording across the Gundangchu followed on to *Thungsia* hamlet. Distance  $4\frac{1}{2}$  miles; road good.

57. 12th November.—Continued parallel to the river, crossing a watercourse from the east, and halted at *Khimbuk* hamlet. Distance 4 miles; road difficult in parts.

58. 13th November.—Road kept parallel to the river and at about 300 paces above it till Paimanesa or Peingbhit chauki was reached where toll was levied and passports examined. Proceeded onwards a short distance till at a bend of the river the route nears it, and for about a hundred paces is carried over a gallery about 6 feet wide run along the perpendicular face of the rock at a height of from 15 to 20 feet above the water's edge. The gallery rests on thick iron bolts driven into the rock at distances of 5 or 6 feet, over which planking is loosely laid; the outer edge is fenced by a rudely-made rope passed round wooden posts which are fixed to the bolts. From this point the river flows in a contracted bed all the way down to Shābru. Continued along the left bank of the river to *Rasia*‡ (or *Rasua*) chauki. Distance 10 miles; road very difficult. This chauki belongs to Tibet, the boundary between which and Nepāl is the mid-channel of a large stream (known as *Rasiakhola* or *Lendichhu*) which comes from the N.E. and falls into the Jongkha Chāngbo at 300 paces below *Rasia* chauki: from the right bank of the river the boundary is continued up the mountains which run in a north-westerly direction.

59. 14th November.—Having crossed the *Rasiakhola* by a wooden bridge 45 paces across (the water-channel of the stream being only about 20 paces wide with an estimated depth of 5 or 6 feet), and proceeded about 100 paces further, the fort of *Kasuagarhi* was reached. This is a square stone-built fort with a side of between 3 and 4 hundred paces; the walls are about 10 or 12 feet thick at the base and rise to a height of about 10 feet, without any loop-holes. It is not garrisoned, but is looked upon merely as an outpost and is occupied by only some half a dozen Nepālese soldiers. Travellers are closely searched here, and those going south are passed on to *Temuria Bhansār*§. Leaving *Kasuagarhi* the party crossed a watercourse from the east, and passing through the hamlet of *Biāsiyāri* proceeded to *Temuria Bhansār* a village of 10 or 15 houses. Here the party was searched again and had to pay heavier taxes|| than had been charged at any other place. The route continued alongside the river, which between *Rasuagarhi* and the point where the

\* Nain Singh was evidently wrong in stating that there was a fort here; he must have mistaken the lofty dwelling of one of the *Jongpons* for a fort.

† This style of roof is not met further north than Rakma on this route, owing to the absence of wood.

‡ *Rasia* (Nepālese) = boundary. § *Bhansār* (Nepālese) = chief custom-house.

|| Large traders of Nepāl returning from Lhāsa are charged at Rs. 45 per man of their party irrespective of the value of their goods: Nepālese officials returning from Lhāsa are charged at Rs. 25 per man: and petty traders at Rs. 15 per man. The explorer's party was assessed under the last class.



Trisuli joins it is locally known as the Bhotia Kosi, and passing the hamlet of Birda *en route* halted for the night in a cave in the hill side. At about a mile north of this halting place, the river is crossed by a wooden bridge over which a road leads to Pokhra *via* the military post of Kuljung or Guljun. Distance  $7\frac{1}{2}$  miles; road pretty good.

60. 15th November.—Route followed close to left bank of the river (Bhotia Kosi) past Ungul village to Shābru a large village situated at the confluence of the Shābru or Langdongkhola and the Bhotia Kosi. Here passes are again examined and taxes (both capitation and on goods) levied. Crossed the Shābrukhola by a wooden bridge 35 paces long (the depth of water here was 4 feet) and came to a sulphur mine which was being worked by a body of 50 Nepālese soldiers under a *sūbahdār*. A little beyond and close to the left bank of the Bhotia Kosi river is a hot spring possessed of medicinal properties. The road here leaves the river which for a distance of about 20 miles flows at an average of a mile to the west. Passing about 200 paces to the west of the large village of Dunglang and through two villages named Bhārku, the road topped the end of a spur and then descended to the Trisuli (here a stream 10 paces wide and 2 feet deep) which was crossed by a wooden bridge and the party halted for the night at the left bank. Distance 5 miles; road pretty good. The Trisuli is said to rise from a lake named Dāmodar Kund distant some 10 miles in an easterly direction on a snow-clad spur: this lake is held sacred by the Nepālese who resort to it in large numbers in August for worship and religious ablution.

61. 16th November.—Crossed a spur on which a little east of the route is the small village of Dhonju, and further on some streams from the S.E., then topped the end of a spur to *Thāndi* (most probably Tangu of Nain Singh) village. Distance 4 miles; road good.

62. 17th November.—Continued the route past Gurang, the large village of Rāmcha and several smaller ones to the village of Betrāwali (at the angle formed by the junction of the Betrāwali nadi with the Trisuli) consisting of some 30 or 40 houses chiefly belonging to petty traders in grain and cloth. The route then kept near the left bank of the Trisuli river past Simri village to the west of Naoakot where it turned westwards and crossed the river by a wooden bridge to *Khinchak bāzār* (Kinchut bāzār of Nain Singh). Distance  $13\frac{1}{2}$  miles; road good. *Khinchak bāzār* is about 500 paces in length lying east and west, and the miscellaneous dealers all seem to be well-to-do; the trade consisting of grain, cotton and woollen cloths, metal vessels, shoes, &c. The houses are all stone-built and roofed with tiles. At this place as well as on the opposite bank of the river, passes are strictly examined and tax levied on goods.

63. 18th November.—After proceeding about a mile the left bank of the Sāmrikhola was struck, and the route thence continued along its sandy banks crossing backwards and forwards and passing *en route* two streams from the north. Halted at *Kākni-pawa*\*. Distance 4 miles; road good.

64. 19th November.—Followed up the Sāmrikhola as yesterday, and then by a gentle ascent to Sāmri pawa at the pass on the long spur running N. and S. which here forms the watershed between the Trisuli and the Buria Gandak. On the pass, in addition to the rest-house there are three shops where provisions are kept for the convenience of travellers. Continued by a stiff descent till the Patharkhola was reached; this was crossed three times, after which passing 3 or 4 shops the left bank of the Baringkhola was struck: the latter is a good-sized stream coming from the N. and is crossed by a wooden bridge. Beyond this the road followed up a gentle ascent of about  $\frac{1}{2}$  of a mile to Thārku pawa situated on the crest of a spur, whence it descended to *Bhag-tani pawa*. Distance  $7\frac{1}{2}$  miles; road good.

65. 20th November.—Ascended a spur and continued along its crest for some distance after which the road descends to the large village of Kalonjia. Beyond this, after crossing a small stream and a spur, the small village of Charangia was reached, and at about  $\frac{1}{2}$  a mile further is Charangiaphedi† pawa. Continued onwards and halted at the small village of *Achania*. Distance 7 miles; road good.

66. 21st November.—At about a mile struck the left bank of the principal head of the Akho river which rises a long way off to the north and here takes a turn to the west. Continued along the right bank of the river passing the small villages of Belghāri and Suporia to Saliānbiasit; after this the road runs at nearly 500 yards to the north of the river and at about  $1\frac{1}{2}$  miles from the last named village crosses the Hikukhola. The road then turns northwards and by a gentle ascent of about  $\frac{1}{2}$  a mile along the eastern face reaches the summit of the Saliāntār plateau, whence it runs on the flat top and, passing a *dharmśāla* at about  $\frac{1}{2}$  a mile, is continued to pass the large village of *Saliāntār*. Distance  $7\frac{1}{2}$  miles; road good. The country on both flanks of the road from Khinchak bāzār to Saliāntār is well cultivated, and numerous villages were seen dotting the hill sides all along. The plateau of Saliāntār, which is about 5 miles in length (north to south) and nearly 2 miles at its greatest width, is elevated about 700 feet above the Akho and

\* *Pawa* (Nepālese) signifies rest-house.

† *Biāsi* and *Phedi* (Nepālese) signify winter-residence.



Buria Gandak rivers. The ascent from the eastern side is easy, but on the western side the face stands like a mural precipice over-hanging the Buria Gandak except where a passage to the river has been made along a flight of stone steps carried down from a distance of about a quarter of a mile. The plateau is well inhabited, and though it is not watered the soil yields a very good rainy-season crop.

67. 23rd November.—Having halted on the 22nd at Saliāntār, the journey was resumed on the following day, and after proceeding for nearly a quarter of a mile along the plateau a descent of some 900 paces was made and the route then turned a little westwards so as to approach the left bank of the Buria Gandak along which it continued till near the end of this day's march. At about 2 miles from the descent and on the bank of the Buria Gandak is a brick-built temple where an annual religious fair is held in October: and further on the villages of Odāri and Pipri were passed beyond which is the large village of *Lodānda* (consisting of about 50 houses enclosed by a stone wall) where a halt was made. Distance 7 miles; road good.

68. 24th November.—From between Pipri and Lodānda the river takes a bend to the west: the route however avoids this bend (being about  $1\frac{1}{2}$  miles E. of it at the angle), and going over the ground which slopes down from the mountains on the east passes through five hamlets and again strikes the left bank of the Buria Gandak. The river was crossed by a temporary wooden bridge, and the route continued along the right bank. Halted at the hamlet of *Lābubiasī*. Distance  $6\frac{1}{2}$  miles; road good for the first half, after which it becomes very difficult and absolutely impracticable for any but foot-passengers. From Mānbiasī a summer and wet-season route strikes up the hill-side to the east and continues along it for some 10 or 12 miles: it then crosses the Buria Gandak by the masonry bridge over which the road from Pokhra to Kuljung is carried, and keeps along the mountain-sides till it reaches the large village of Birjam about 20 miles further north. This route is only practicable for the smaller beasts of burden, *viz.*, goats and sheep.

69. 25th November.—The route kept along the right bank of the Buria Gandak, through dense jungle to *Khorlangbiāsi* the winter-residence of the inhabitants of Khorlang a village in the mountains some distance to the N.W. Distance 5 miles; road very difficult.

70. 26th November.—Crossed the Buria Gandak at about a mile by a temporary wooden bridge and continued along the left bank for some six or seven miles when the river was recrossed and the party halted at a hamlet where there is a (*Jegāti*) chauki. Here 5 Nepālese soldiers and a tax-collector are stationed. About midway on this day's march the road from Pokhra to Kuljung running east and west was passed. Distance  $6\frac{1}{2}$  miles; road very difficult and all the way through jungle. At about 2 miles S. of the (*Jegāti*) chauki a glacier was visible to the east, from the foot of which a good sized waterfall issues and plunges down a mural precipice of which the explorer estimated the height as 2,000 feet: for about half way down the water is visible in a connected body, but thereafter it descends as a shower of fine spray to the depths below.

71. 28th November.—Detained at the (*Jegāti*) chauki on the 27th, and resumed the journey on the following day. The route after crossing a stream from the west is carried along a narrow gallery (supported on wooden beams) for about 800 paces: this is practicable only for foot-passengers and the smaller beasts of burden. It then kept practically parallel to the river and passing three hamlets on the way, which are the first villages on this route that are exclusively inhabited by Tibetans, the party halted at the large village of *Pangsang* distant about one-third of a mile to the west of the Buria Gandak. Distance  $6\frac{1}{2}$  miles; road very difficult through grass and underwood. From about  $1\frac{1}{2}$  miles south of Pangsang a summer and wet-season route strikes up to the east past Phiring village, and keeps along the mountain-side going northwards till it meets the direct route from Gunda (on the Jongkha Chāngbo) to Nubri. Another route leaves Pangsang for the iron mines which are said to be about 5 or 6 miles to the N.W.

72. 29th November.—From  $\frac{1}{2}$  mile N. of Pangsang a snowy peak (No. XXVII) was observed; and at a little further on the route crosses the Dhunga Sāngūñkhola over a natural bridge formed by two huge rocks which abut against each other at a height of 40 feet above the water-level. From the bridge a lofty snowy peak (No. XXX) was observed distant about 15 or 16 miles. The route continues west of the river to the small village of Niak, about a mile S.W. of the confluence of the Buria Gandak and the Shiārkhola which latter brings down a considerable body of water from the N.E. At 700 paces beyond Niak snowy peak No. XXVII was again observed; and from a little further the route continued parallel to and at about half a mile above the Buria Gandak which for about 4 miles above the junction of the Shiārkhola flows through a very contracted gorge. Halted at the edge of a small stream flowing from the S.W. Distance  $5\frac{1}{2}$  miles; road very difficult and through jungle.

73. 30th November.—At about a mile the route crossed over to the left bank of the river to the village of Ranagaon, and then kept along it for about 4 miles passing through the

village of Bhūdgaon: the river was then recrossed and the route continued parallel to it, the party halting at the village of *Birjam* situated at about 400 paces above the river. Distance 8 miles; road for the most part difficult.

74. *Birjam* is the Nepālese name of the village which by the Tibetans is known as Nubri. It is the head-quarters of the governor of the Nubri *ilāka* which extends for about 50 miles in length from north to south, *i.e.*, from the Nepāl-Tibet boundary southwards to about 7 or 8 miles north of Saliāntār. Between *Birjam* and *Niak* the sites of several villages were passed which are occupied by the villagers of the neighbouring mountains in winter.

75. The explorer having reached the northern limit of his route in this locality, retraced his steps along the *Buria Gandak*, and in six days arrived at *Arughāt* on the right bank of the river opposite to Saliāntār. The *Buria Gandak* between Saliāntār and *Arughāt* is spanned by a wooden bridge 35 paces in length and elevated about 25 or 30 feet above the water level. *Arughāt* is a village consisting of about 15 houses belonging to petty traders: a tax-collector also resides here, and at the time the party passed through there were 8 or 10 Nepālese soldiers at the place. From *Arughāt* a good road leads westwards to *Gorkha Darwār*. At *Arughāt* the party was detained three days, pending the result of enquiries as to where they had come from and for what purpose. The explorer professed to have gone all the way to Nubri in search of one of his dependants who he alleged had ran away from his home in *Jumla* with a large sum of money some time before, but whom he had not succeeded in finding. He said that having failed in his object, he was anxious to return home *viā* *Tribeni* where he intended going through the customary religious observances. He was then allowed to proceed, but warned that, owing to the disturbed state of the country consequent on the recent insurrection in *Kātmāndu*, he was liable to detention in several places.

76. 10th December.—The route kept near the right bank of the river at first; it then ascended a couple of low spurs and descended to the chauki and small fishing-village of *Borlangahāt* where ferry-boats carry passengers across the *Buria Gandak*. The river lower down has a somewhat tortuous course: this the route avoided, and passing through the *Mājātār* cattle-sheds the party at the *Sātibisītār* cattle-sheds. Distance  $5\frac{1}{2}$  miles; road fair, but rocky.

77. 11th December.—Proceeded along the right bank, past the small fishing-village of *Baktarghāt* (where a ferry-boat plies) to the *Kundutār* cattle-sheds. Distance 5 miles; road as yesterday.

78. 12th December.—Continued along the right bank, past the *Darguntār* cattle-sheds to the hamlet and chauki opposite the point where the *Trisuli* river falls into the *Buria Gandak*. Distance 5 miles; road fair, through tall grass. The explorer estimated that the body of water brought down by the *Trisuli* was somewhat in excess of that by the *Buria Gandak*, also that the current of the former was more rapid than that of the latter. The hamlet of *Pāwātār*, where there is a rest-house, is on the opposite side on the south bank of the *Trisuli* and a road leads thence to *Kātmāndu*. The party was detained here for five days, pending their ability to find security for their good behaviour further on. At length one of the petty traders in the neighbourhood, after receiving a gratification, offered the necessary security and the party was permitted to proceed. From *Arughāt* to the junction of the *Trisuli*, there are numerous villages on the hill-sides east and west of the river, but the low ground is occupied only in winter by cattle owners who drive down their herds partly to avoid the cold but chiefly for the abundant pasture which is to be found on the river banks. In several places on the river bank the explorer saw traces of gold-washing having been carried on.

79. 18th December.—Crossed the river, which is henceforward known as the *Trisuli*, by a ferry-boat, and halted at the moderate-sized village of *Bichraltār*. Distance 1 mile; road good.

80. 19th December.—Topped a low spur and followed the left bank of the *Trisuli* to *Phachchamtār* chauki. Distance  $3\frac{1}{2}$  miles; road good. The explorer saw gold-washing being carried on at this place by the inhabitants of *Phachcham* a large village on the hill-side distant about half a mile to the south. The party was detained two days at the chauki.

81. 22nd December.—Proceeded to *Hugdī* chauki. Distance 2 miles; road good. Detained one day.

82. 24th December.—Forded the *Hugdikhola* and ascended along the crest of a spur to *Jogimāra* a village of 10 or 12 houses. Distance  $2\frac{1}{2}$  miles; road steep.

83. 25th December.—Continued along the crest of the spur to the ruined fort of *Jogimāra*, the site of which is occupied by a hamlet of six or seven houses; thence descended, and after crossing the two branches of the *Rigdikhola*, ascended the side of a spur to the small village of *Kaolia*. Distance  $8\frac{1}{2}$  miles; road difficult, owing to ups and downs.

84. 26th December.—Continued up the side of the spur to another village named *Kaolia*, and proceeded thence along the crest to the fort of *Upardangarhi*. Distance 4 miles; road difficult. The fort is square with a side of 100 paces, and has masonry walls (loop-holed) rising to a height of about 25 feet. In the hot weather, the fort affords a sanatorium for between two and three hundred Nepālese soldiers who are sent up to it from the plains *iluka* of Chittawan. The party was closely interrogated here, and owing to the disturbed state of the country the explorer's arms (consisting of an old double-barrelled gun and four *kukris*) were taken away. After a detention of five days the party was allowed to proceed southwards.

85. 1st January 1886.—Proceeded by a stiff descent along the crest of a spur to *Seriabās thāna* which was unoccupied at the time, and thence by a gentler slope to the flat jungle-land below; continued southwards to the hamlet of *Dābarpāni*\* and beyond to that of *Kalwapur* on the right bank of a stream which rises east of *Upardangarhi* and falls into the *Rāpti*. Distance 7 miles; road difficult, owing to dense undergrowth in the forest passed through.

86. 2nd January.—Proceeded about a couple of miles, and having lost the path (owing to dense jungle) returned to *Kalwapur*: having secured a guide, the party set out again and halted at the hamlet of *Gotholi*. Distance 3 miles; road as yesterday.

87. 3rd January.—Route turned westwards, and continued through dense undergrowth to *Parsoni*, a village of 15 or 20 houses and the residence of a Nepālese forest officer. Distance  $1\frac{1}{2}$  miles; road as yesterday. As a convenient northerly track strikes away from *Parsoni*, the explorer himself halted at this village while he sent a man of his party (whom he had partially instructed in traversing) under pretence of bathing at the temple of *Go Ghāt* (situated in the angle formed at the junction of the *Seti* and *Trisuli* rivers) to proceed thence down the river. A ferry-boat carries passengers across the *Trisuli* both at *Go Ghāt* and *Deo Ghāt* lower down. The man traversed down a fair road along the eastern bank of the river through the villages of *Gethi* and *Dumra* to opposite *Deo Ghāt* temple situated at the confluence of the *Kāli Gandak* and the *Trisuli* rivers, the volume of water in both rivers being said to be about equal. Below the confluence the river is known as the *Narayani*. At *Deo Ghāt* an annual religious fair is held in the beginning of February. This fair lasts for about a month, and large quantities of goods as well as cattle and ponies change hands here. The traders who frequent the fair come all the way from *Pokhra*, *Kātmāndu*, *Batoli*, and *Bettiah*, and heavy taxes are levied by the Nepālese government on the goods brought for sale. Nearly two miles below *Deo Ghāt* is the small village and *chauki* of *Dhārigaon*, and about three miles lower down is the large village and military post of *Narāingarh* where the man was joined by the explorer.

88. 8th January.—Left *Parsoni* and proceeded through dense jungle infested by wild elephants to *Narāingarh*. This is a place of some importance, being a depôt where all the timber floated down the river in winter is examined and duty levied. About 50 soldiers under the command of a *sūbahdār* are stationed here. The road beyond *Narāingarh* was found cut away by the river, and the party had to strike a path through the forest, after which not being able to recover the road they continued their way as best they could to the small village of *Phaleni*. Distance  $8\frac{1}{2}$  miles; road very bad.

89. 9th January.—Owing to a belt of dense forest (chiefly of *dalbergia sissoo* or *shishum*) standing on the left bank of the *Narayani* river down to a couple of miles north of the junction with it of the *Rāpti*, the road leaves the river and skirts the eastern edge of the forest. Passing through the small temporary hamlets of *Bancharia*, *Belua*, *Langota*, and *Hatāhi*, the party halted at the hamlet of *Simri*. Distance  $6\frac{1}{2}$  miles; road fair.

90. 10th January.—Passed through the hamlets of *Sisai* and *Sakarbhar* (*Ghāgra* and *Dadarhani* being at short distances off the road) to the large village of *Jitpura*. Distance  $4\frac{1}{2}$  miles; road good. From here a good road leads south for *Bettiah*: the *Rāpti* is said to be about 2 miles distant to the south.

91. 11th January.—Continued the route through *Naiagaon* hamlet to *Pathargaon* village and *chauki*. The explorer's party was interrogated and their goods examined, when having declared themselves to be nothing more than pilgrims they were allowed to proceed. At about a mile beyond, the right bank of the *Rāpti* was reached. This river has here a sandy bed about 400 paces across, with a sluggish current, the width of the channel being about 200 paces and the depth of water only about 2 feet. Having forded the river, the party halted on the left bank at about 2 miles lower down. Distance 6 miles; road good.

92. 12th January.—At about a mile lower down is *Kuriaghāt*, at the junction of the *Rāpti* and *Narayani*, and thence a view of the latter was obtained for about 2 miles higher up. The combined waters are said to form a river the water-channel of which is estimated to be about

\* From this village southwards, the inhabitants of the villages are Thārus an agricultural sect of lowlanders.

500 paces wide. At Kuriaghāt a ferry plies across the river. The route lay along the left bank for some 4 miles, at first through open ground and afterwards through jungle at the foot of the hills, till the Leraghāt ferry was reached. After continuing along the bank for more than a mile further, the road leaves it to avoid a bend in the river, and entering the hills tops a long spur running east and west. The Kanha river at the base of the spur having been crossed, the party proceeded about a mile further, and halted at a spot where some men proceeding southwards with grain were found bivouacked. Distance 11 miles; road difficult.

93. 13th January.—Continued through the broken hilly ground for about a mile southwards; the route then struck off westwards for nearly 2 miles, after which it took a south-westerly turn and kept parallel to the river (at nearly three-quarters of a mile to the east) till the Pachnad stream was met. The party having forded the stream continued along its left bank to the sheds opposite *Tribenighāt*. Distance 5½ miles; road difficult.

94. *Trade*.—The trade from the Lhāsa direction between Ting-ri and Kātmāndu is chiefly carried over the Nilam Dzong route a description of which will be found at page 3—, of the General Report of the Great Trigonometrical Survey for 1871-72. There is no trade whatever on the route between Ting-ri and Jongkha fort, but the latter forms a convenient *entrepôt* for the Dokpas and other Tibetan traders from the north and north-west, who in summer bring down salt, goats, blankets, musk-pods, and ponies, for the Kātmāndu market. As the Nilam Dzong route is absolutely impracticable for ponies, the trade in these is very largely forced into the route *viâ* Jongkha Fort and Kirong. The traders return with rice, tobacco-leaf, brass and copper vessels, and cotton and woollen cloths imported from India.

95. The Nubri *ilāka* is celebrated as the tract in which the plant the root of which is known as *Nirbisi* is indigenous. Large quantities of the root are gathered in the months of July to October, and after being dried in the shade are ready for export. The root is then chiefly exported north-wards and north-westwards, while a comparatively small quantity finds its way south. Besides this, a few skins of *munāls* and argus pheasants are brought down for transport to the Indian market. It will thus be seen that the Buria Gandak route is not utilized as a regular trade-route between Tibet and Nepāl. On the banks of the Narayani, as far north as a little beyond Go Ghāt, quantities of *sāl*, *tunn*, and other timber are cut by men who go up for the purpose from British territory. The timber is floated down the river in log and large stacks of it are to be met at Tribeni.

96. Of domestic animals, the only ones met with in the portion of Tibet between Ting-ri, Jongkha fort, and Rasuagarhi, are yaks, *zobus*, goats, and sheep, with a few fowls occasionally to be seen at the large places. In Nepāl to about latitude 28½° along the route taken by the explorer, buffaloes, cows, and goats are everywhere met with; while further north the country is exclusively inhabited by Tibetans, and sustains yaks, *zobus*, and sheep.

97. *Fauna*. Besides a few Tibetan antelopes (*antilopus Hodgsonii*) found in the open country west of Ting-ri, the only kinds of wild animals seen by the explorer were the golden wolf of Tibet (*lupus chanco*), the marmot (*arctomys bombac*) and the rat-hare or tail-less rat (*lagomys*), but of this last he is unable to furnish any description which would serve to identify the particular species that was met with. Tigers and elephants abound in the dense *sāl* jungles which stretch away east of the Narayani below Go Ghāt.

98. *Flora*. Between Ting-ri and Tashirāk (about 10½ miles south of Jongkha fort) not a tree of any kind is to be seen. There is, however, abundance of grass and furze to be met with all along the route. At Tashirāk no furze was seen, but a few stunted willows (? *salix lindleyana*) and a species of barberry (*berberis aristata* called *chotra* by the natives) were met on the river sides as far south as Gunda. From Gunda to a little below Kirong dense forests of the *abies webbiana* are met with at the lower elevations, and of the *betula bhojpattrā* on the higher mountain-sides, with a thick undergrowth of the mountain-bamboo or *ringāl*. Specimens of the creeping-cedar or juniper shrub (? *juniperus religiosa* called *bil* by the Nepālese and used by the Tibetans as an incense) and of the red currant (*hisālu* of the Nepālese) were also met with. As is to be noticed in other parts of the Himalayas, the northern faces of the mountains were generally found to be more luxuriant both in arboreous and shrubby vegetation, due partly to greater depth of soil and partly to less direct influence of solar rays. From Thungsein (a little below Kirong) to a couple of miles beyond Rāmcha—practically the middle belt of Himalayan vegetation, *i.e.* from about 5 to 9000 feet in elevation—the arboreous specimens of temperate climes were found to flourish. These were, the common oak (*quercus incana*), rhododendron *arboreum*, wild cherry (*cerasus padam*), the mountain pear (? *pyrus variolosus* or *lanata*), and a tree known by the natives under the name of *añyār* (most probably the *andromeda ovalifolia*) the young leaves of which secrete a viscous fluid in March and April and are then poisonous if eaten by cattle but not so later on when the leaves are fully developed. It is said that honey extracted from the flowers of this tree (which blossoms luxuriantly every three years)

is also possessed of somewhat deleterious properties, and is therefore not used by the hill people: in this last quality it corresponds with *kalmia latifolia* one of the Rhodoreæ. A dense undergrowth of a thinner species of *ringil* is to be met with all along this part of the route.

99. South from Rāmcha to Naiakot, thence westwards to Arughāt, and northwards again to Lodānda, the usual tropical specimens met with in the lowest belt of Himalayan vegetation were seen, such as mangoes, plantains, the large bamboo, jackfruit, *semal*, *tunn shishum* (*dalbergia sissoo*), with some dwarfed *sāl* trees. Beyond Lodānda and as far north as Niak, vegetation appertaining to the middle belt was met, but not so uniformly dense as between Gunda and Kirong: still further north *abies webbiana*, *quercus dilatata* and *semecarpifolia* (the latter called *khursoo* by the Nepālese), *betula bhojpatra* which attains the highest elevation) with an undergrowth of *ringil* jungle were to be seen for some distance up the mountain-sides. Neither furze, juniper, nor rhododendrons of any kind were noticed; though there can be little doubt that the two latter must exist at the higher limits. In the portion of the Nubri *ilika* north of Pang-sang, *aconitum heterophyllum* (the *atees* of the natives and highly valued for its medicinal properties) is found. The root of this plant is said to be of an ashy color with two fusiform tubers very white inside and of a bitter taste, thus corresponding exactly with the description given by Royle: the roots are gathered from June to December and dried in the shade. Another plant of the same kind called *bis* is also met with in this locality: this is probably the *aconitum ferox*, and is described by the explorer as differing from the *atees* in the following essentials, *viz.*, that the plant sends up *several* stalks emanating from *several* yellowish-white tubers congregated round the root, (while the *atees* has but a single stalk); the tubers are also much larger than those of the *atees*, and they do not acquire a proper consistency till November and December. The root, though highly poisonous, is used medicinally for rheumatism and other diseases: for this purpose it is encased in a thick covering of cow-dung and well baked so as to reduce the virulence of its poison. Owing to its deadly properties, and the improper uses to which it had been put, the Nepālese government have issued stringent orders against any trade being carried on in it. But the most important plant found in this locality is the famous *nirbisi* of the natives which is said to be—as its name signifies—an antidote to poison. As its specific identification was, and perhaps still is, a matter of considerable doubt, it is much to be regretted that the explorer did not actually see the plant. From accounts that he heard, he says it has only a single stalk; the leaves are long-petioled, lobed, and crenated, and occur only at the base: the stalk rises to a height of about 1½ feet and the inflorescence is about as copious as in the *atees*: the peduncles spring from small white sessile bracts, and support more than one flower: the flower is of the same color as that of the *atees*, with one of the petals somewhat caudated. The root has two or three tubers from 1 to 2½ inches in length. The tubers brought down by the explorer are generally cuneiform, the heart being white, or brown; but he avers that in some few the heart is of a reddish colour, and these are much more valuable than the others.

*Vocabulary of Vernacular (Nepālese and Tibetan) words, with their signification or equivalent.*

Nepālese	Tibetan		Signification or equivalent
Añyār ...	...	...	The <i>andromeda ovalifolia</i> .
Atees ...	...	...	The <i>aconitum heterophyllum</i> .
Bazār ...	(Hāta)	...	Market.
...	Bhanjang	...	Mountain-range of contracted extent.
Bhansār ...	...	...	Chief custom-house.
Biāsi ...	...	...	Winter-residence; see also <i>Phedi</i> (Nepālese).
Bil ...	...	...	The creeping-cedar, or <i>juniperus religiosa</i> .
Bis ...	...	...	The <i>aconitum ferox</i> .
...	Chāngbo	...	River; see also <i>Tsang-po</i> (Tibetan) and <i>Kosi</i> (Nepālese).
...	Chānko	...	The Tibetan wolf of a greyish-yellow colour ( <i>lupus chanco</i> ).
Chauki ...	...	...	Custom-house or police station.
...	Chho	...	Lake; see also <i>Pokhri</i> and <i>Kund</i> (Nepālese).
...	Chu	...	Stream; see also <i>Khola</i> (Nepālese).
(Tātapāni) ...	Chhuchhān	...	A hot spring.
...	Cho	...	The Tibetan antelope ( <i>antilopus Hodgsonii</i> ).
Chotra ...	...	...	A species of barberry ( <i>berberis aristata</i> ), from decocting the bark and wood of which the best kind of the native medicine <i>rasol</i> is obtained.
...	Chungja	...	A middling quality of tea.
...	Daipon	...	Governor of a province.
(Jhaukando) ...	Dāma	...	Tibetan furze <i>caragana</i> ( <i>gerardiana</i> , <i>caragana versicolor</i> , and a species of <i>astragalus</i> ).

NOTE.—Words in the first and second columns which are enclosed in ( ) do not occur in the Report.

*Vocabulary of Vernacular (Nepālese and Tibetan) words.—(Continued).*

Nepālese	Tibetan	Signification or equivalent
Deodiār (or Diār) ...	...	The <i>pinus deodara</i> .
Dhunga ...	(Dhoa) ...	Stone; whence <i>Dhunga-Sāṅgūñ</i> (Nepālese) a stone bridge.
...	Dok ...	A black tent.
...	Dokpa ...	Literally a dweller in black tents; a nomad.
Dūdḥ Kund ...	Humichho ...	Milky lake.
(Pola) ...	Dum (or Dāmu) ...	A brick of tea.
Gaon ...	(Dong, Dongba, Lungba) ...	Village.
Garhi ...	(Khar) ...	Fort or fortress.
...	Ghangār ...	A plain of some extent; see also <i>Thanka</i> (Tibetan).
Ghāt ...	(Rab or Raph) ...	A river-crossing, whether by ford, ferry, or bridge.
...	Gompa ...	A lamasery.
Gurrāl ...	...	The Himalayan chamois ( <i>semorhædus goral</i> ).
...	Gyāṅpa ...	Chief village official.
...	Gyatiu ...	A riding-mule.
Hisālu ...	...	The red currant ( <i>Ribes</i> ).
Ilāka ...	...	District.
...	Dzong ...	Residence (whether a fort or otherwise) of a governor of a district who is called <i>Jongpon</i> .
...	Jungchhongpan ...	Title of a commercial representative of the Lhāsa government.
Khark ...	Dhong ...	Cattle-sheds.
...	Khatāg ...	A small silken handkerchief, bestowed either as an offering or as a mark of favour.
Khola ...	Chu ...	Stream.
Khursoo ...	...	A species of oak ( <i>quercus semecarpifolia</i> ).
Kosi ...	Chāṅbo (or Tsang-po) ...	River.
Kukri ...	...	The short, heavy, curved knife used throughout Nepāl in place of a sword.
Kund ...	Chho ...	Lake.
...	Kyāṅ ...	The wild horse ( <i>equus hemionus</i> or <i>kyang</i> ).
...	La ...	Pass over a mountain range.
...	Libūn ...	A species of turnip.
Maidān ...	Ghangār or Thanka ...	A plain of some extent.
Munāl ...	...	A species of pheasant ( <i>lophophorus impeyanus</i> ).
...	Naktāṅ ...	A Tibetan coin (of equal parts of silver and alloy) valued at a half-rupee.
...	Neh ...	A species of barley.
Newār ...	...	The trading sect in Nepāl.
Nirbisi ...	...	Literally poison-antidote; a plant of the aconite species.
Pahār ...	(Rhi) ...	Hill or mountain.
Patti ...	...	A fiscal division of territory, subordinate to a native revenue-collector.
Pawa ...	(Kunkhāṅ) ...	Charitable rest-house ( <i>dharmaśāla</i> in Hindi).
Phedi ...	...	Winter residence.
Pokhri ...	Chho ...	Small lake.
Rasia ...	(Chhiāk) ...	Boundary.
Rāindiār ...	...	The most magnificent species of pine ( <i>abies webbiana</i> ), the foliage of which is arranged in the form of a cone.
Riāns ...	...	A species of oak ( <i>quercus dilatata</i> ).
Sāṅgūñ ...	(Shamba) ...	Bridge.
...	Tāma ...	A species of pea.
Tār ...	...	Level land bordering a river, whether cultivated or waste.
(Hulāk) ...	Ta-sam (Tarjam) ...	Post-house, or official staging-place.
Thāna ...	...	Police-station.
...	Thanka ...	A plain of some extent.
Thār ...	...	The Himalayan wild-goat ( <i>hemitragus jemblaicus</i> ).
...	Tīu ...	A burthen-mule.
...	Zobu ...	Cross breed (male) between yak and cow.
...	Zomu ...	Cross breed (female) between yak and cow.

NOTE.—Words in the first and second columns which are enclosed in ( ) do not occur in the Report.



*Notes by RINZIN NIMGYL on the country bordering Eastern Assam  
from information obtained during season 1888-89.*

While employed under Colonel H. C. B. Tanner, S.C., Deputy Superintendent, in charge No. 18 Himalaya Party, I was ordered to accompany Mr. Needham, Political Officer at Sadiya, on a journey up the Tsang-po river.

I left Simla on the 12th November 1888 and reached Calcutta on the 18th, after which I proceeded to Nāthāng (Gnatong) in Sikkim, according to the Surveyor General's orders, to obtain information from Lama Ugyen Gyatso regarding South-East Tibet.

Such information as I received from the Lama I plotted on a copy of Pandit Kishen Singh's exploration map, which is now with Mr. Paul, the Deputy Commissioner of Darjeeling.

After finishing the above work I left Nāthāng for Calcutta, where I arrived on the 11th of January 1889.

On the 15th January I left Calcutta for Sadiya by the orders of the Surveyor General, being accompanied by an explorer and guide named *Kinthup*, whose journey down the lower Tsang-po was reported on by Colonel Tanner in the Annual Report for 1886-87. I arrived at Dibrugarh on the 28th of January and applied for assistance to the Deputy Commissioner, Lakhimpur, who referred me to Mr. Needham.

Leaving Dibrugarh on the 30th, I arrived at Sadiya on the 31st January 1889. Next day I went to Mr. Needham for orders and assistance for the proposed journey up the Tsang-po and to the Mishmi hills. He told me to wait till a reply was received from the Chief Commissioner, Assam, to whom he had applied for permission to make a trip into the Mishmi hills. I had to wait at Sadiya till the 4th March; during my stay I took a few observations from a trigonometrical station and sketched the country round Sadiya.

Mr. Needham's journey not being thought advisable on political grounds, the object of my deputation failed, but during my stay at Sadiya, I obtained the following notes on the country bordering Eastern Assam, chiefly from Abor and Mishmi travellers whom I met at Sadiya:—

Towards the north and two days' journey from Sadiya, there is a village called Bam-jor, situated on the right bank of the Dibang river. At a distance of about half a day's journey from Bam-jor towards the west there is a village named Shiluk, which is on the right bank of the river Sesiri\*. In a southerly direction, half a day's journey from Shiluk, is Mebo; from Mebo at the same distance and in the same direction is a village called Komkua. At a distance of about seven miles from Komkua towards the south-west, a river called Sēku has to be crossed, beyond which about four miles towards the west, is a village called Ayeng. Towards the north-west of Ayeng is another village called Duku, distant one day's journey and about six miles east of the junction of the rivers Tsang-po and Yang-sang† or Yam-ne‡.

Route No. 1 from Sadiya to Pemakö  
and Damro Padam and Simong (Shimong).

\* Sesiri by Upper Assamese,  
Shishar by Mishmis.

† Yang-sang by the people of Pemakö.  
‡ Yam-ne by Abors.  
The river Yam-ne is as large as our  
Great Ranjit in Sikkim.

Towards the north of Duku after crossing a stream, Pāse, situated about two miles from the left bank of the Yam-ne, is reached in one day.

Continuing towards the north, Damro Padam§ is one day's journey. It lies at a distance of about three miles east of the river Yam-ne and west of the Regam range, and is not on the left bank of the Tsang-po as reported by Kinthup.

§ Damro Padam by Mishmis and  
Abors.  
Miri Padam by Kinthup.

The Bor Abors call Damro Padam, Peirten Permi, which means one of the capital villages among the Bor Abors. It is a locality numerously dotted with houses, and inhabited by Abors, to which the people of Pemakö and Zyul, together with Miris and Mishmis, come for trade, &c.

There is a short cut from Damro Padam to Shiluk, across the Regam range. After crossing a cane bridge on the Yam-ne river, Milāng and Onlet villages are reached in half a day's journey from the bridge over the Yam-ne. The river Yam-ne has two sources, the eastern one of which drains Zyul Ted, and the other branch, the eastern Pemakö country. The western is called Yang-sang river, and the other Zyul Chu, the united branches being called Yam-ne by the Abors.



One day's journey to the north of Onlow or Olon (Onlet), a village called Darpin\* or Tarpin is met with, situated on a slope.

\* Darpin by Abors,  
Tarpin by Kinthup.

Towards the west, distant also one day's journey, a village called Gobuk† or Mô-buk, is met across a stream which joins the Yam-ne. From

† Gobuk, by Abors,  
Mô-buk by Kinthup.

Mô-buk after crossing a low pass, the large village of Simong (Shimong) is reached. The range between Simong (Shimong) and Mô-buk is a branch apparently from the Yang-Süngner snowy peak and trends towards the south; the altitude is inconsiderable.

Simong (Shimong) is inhabited by Abors and is situated on flat ground at a distance of about five miles from the Tsang-po river which lies to its westward.

Pemakö is situated about five days' journey from Simong (Shimong) towards the north-west. Pemakö forms the boundary between the Abor country and Tibet. The tract of southern Pemakö is inhabited more by Chingmi tribes than Tibetans, which fact I heard verified when in eastern Bhutan. The Abors call the Chingmis, Monba.‡ They come several times yearly to Simong (Shimong).

‡ Monba signifies lowlanders.

After crossing a cane bridge on the Tsang-po river to the west of Simong (Shimong) Karkua village on the right bank is passed at a distance of eight miles, but the road to Pemakö lies up the left bank to Ke-ti or Ge-ti, about four days' journey from Pemakö.

To the south of Karkua a road leads along the right bank of the river Tsang-po for four days' journey when a village called Pü-ling is met with, situated above the junction of the Tsang-po and Shi-mäng rivers; between Pü-ling and Karkua there are three villages, viz., Pang-kang, Rigu and Pü-rong. The river Shi-mäng rises towards the west and flowing eastward joins the Tsang-po near Pü-ling.

Route No. 2 down the right bank of the Tsang-po from Karkua to Romkong and Sadiya.

After three days' journey towards the south from Pü-ling, Ke-bäng village is reached; it is situated at the junction of the Seeom and Tsang-po rivers; between Pü-ling and Ke-bäng there are three villages, viz. Kolging, Mo-pid and Shi-Shen. The rivers Seeom rises in the west, and, flowing towards the east, joins the main river near Ke-bäng.

After crossing a cane bridge over the river Seeom, there is a village called Ru-tung, which is on the right bank of the river Tsang-po and opposite Pangie. The Tsang-po is spanned by a cane bridge between these two villages. Pangie is situated at a distance of about two and a half miles from the junction of the Tsang-po and Yam-ne. And towards the east, after crossing a cane bridge over the Yam-ne, the village of Duku (mentioned in Route No. 1) is met with.

About one day's journey towards the south-east of Ru-tung and across the low Riga range, a village called Romkong is situated on the southern slope.

The abovementioned stages are tabulated in the routes given below.

In the panoramic view seen from Sadiya the following details of geography can be traced:

The Dibang§ river could be clearly seen at a distance of about 40 miles, and seems to lie at a lower elevation than the Dibang valley.

§ Dhang by Upper Assamese,  
Shiang by Abors and Mishmis.

The slopes are entirely covered with various kinds of forests; any one ascending the Riga range could obtain much information. I heard that there is a lake in the midst of the range surrounded by forest.

The Regam range is also visible from Sadiya, but other ranges obstruct the view towards the Tsang-po valley.

People pointed me out the direction of Damro Padam or Miri Padam, the magnetic bearings of which I found to be 326° from Sadiya. It is situated beyond the peaks whose heights are 9,100 and 8,010 feet on the range which slopes down from the north and forms the watershed between the Yam-ne and Sesiri rivers.

As for the details of the Dibang|| valley, I did not get any information and cannot say where it rises. People say that the rivers Yam-ne and Lohit rise from the same range in Zyul.

|| Dibang by Upper Assamese,  
Sekang by Mishmis.

In my opinion if two or three inhabitants of Upper Assam, able to read and write, be taught route-surveying, the geographical details can be easily obtained, as the Assamese journey up the Tsang-po for trade.

Routes from SADIYA to PEMAKÖ along the left bank of TSANG-PO river via DAMRO PADAM and SIMONG (SHIMONG).					Routes from SADIYA via ROMKONG to MIMA in PEMAKÖ along the right bank of TSANG-PO via RIGA village.				
Names of villages and stages				Number of days	Names of villages and stages				Number of days
Bam-jor	...	...	...	2	Mong-ku	...	...	...	3
Dambuk*	...	...	...	½	Romkong	...	...	...	½
Shiluk	...	...	...	½	Yonku	...	...	...	
Mebo	...	...	...	½	Bu-tung	...	...	...	1
Komkua	...	...	...	½	Ke-bāng	...	...	...	1
Ayeng	...	...	...	1	Shi-Shen	...	...	...	1
Duku	...	...	...	1	Mo-pid*	...	...	...	1
Päse	...	...	...	1	Bolging	...	...	...	1
Damro Padam or Miri Padam	...	...	...	1	Pä-ling	...	...	...	1
Milang and Onlet ...	...	...	...	1	Pä-rong	...	...	...	1
Darpin or Tarpin ...	...	...	...	1	Riga	...	...	...	1
Gobuk or Mö-buk...	...	...	...	1	Karkua	...	...	...	1
Simong (Shimong)	...	...	...	1	Yu-ying	...	...	...	1
Gongko	...	...	...	½	Ke-rāng	...	...	...	1
Ge-ti or Ke-ti	...	...	...	½	Bo-ria	...	...	...	1
Pä-ling	...	...	...	½	Mima or Dangam	...	...	...	1
Ricol or Rikar	...	...	...	½					
Puging	...	...	...	1					
Shobang	...	...	...	1					
Hanging	...	...	...	1					
Shinging (Singging)	...	...	...	1					
Angi	...	...	...	1					
Satong	...	...	...	1					

\* It is not clear whether these villages are on the route or off it; from the map it would appear that they are not on the route.

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***Report by COLONEL T. H. HOLDICH, R.E., on a route survey by Atma Ram, in company with Captain Bower, in Tibet and Western Frontier of China, in 1891-92.***

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Atma Ram, the author of the following notes on his journey from Changtan (or Chang-thang) eastwards to Ta Chen Lu on the confines of China, is a young man of about 24 years of age, who joined the Simla Drawing Office of the Survey of India on the 1st November 1890, as writer, and continued in that capacity until April of the following year when he volunteered to accompany Captain H. Bower, in trans-Himalayan explorations of little known regions.

This is what Captain Bower says of him :—

"I have the highest opinion of Atma Ram's powers of physical endurance in marching and camping out at high altitudes, and have nothing but praise for the excellent manner in which he conducted himself throughout the trying times he had in Tibet. He was as willing to lend a hand in loading our baggage animals, as he was untiring in keeping up the excellent record of the traverse survey. Nor was he less conspicuous in his willingness to shoulder a rifle, and I have no doubt that had it been necessary, he would not have flinched, at any critical moment, to have also used the weapon with good effect."

Atma Ram had been taught the use of the prismatic compass in the Imperial Forest School, at Dehra Dūn, where he had been a pupil for a short time; and though his knowledge of surveying was very slender and confined to the use of that one instrument, yet his natural quickness of adaptation and ability enabled him to employ that little knowledge with very good results. He has already shown himself to be a careful, steady and painstaking observer, and he will doubtless prove as resourceful a surveyor with the planetable, in any future explorations he may have the good fortune to undertake, as he is with the compass.

It may, perhaps, be due to the inhospitable region through which he traversed, on his journey in Tibet, that his narrative contains so few incidents of travel, or it may be due to his inexperience, that we have not more ample details of the manners, customs and ways of the people he came across; but it is probable that had he recorded his notes in his own vernacular, in place of employing the medium of English, he could have given us the result of his observations more fully than his limited knowledge of English permitted.

The experience he has now gained, will, no doubt, serve him well in any future work of this kind, and will justify the expectations which have been formed from this first attempt to survey in such an elevated region as Eastern Tibet; where the frost and cold for lengthened periods are so intense and the marches so laborious and wearisome, that they might well frustrate the successful accomplishment of an unbroken traverse of over 2,000 miles in length, stretching across no less than 24 degrees of longitude.

This, however, was what he accomplished, and the following are his notes on the journey.

### Notes by Atma Ram on his Journey from Lanak Pass to Western China.

We started from Lanak plain (in Changtan or Chang-thang), which is surrounded by low hills and where we found the water frozen everywhere, on the 3rd July 1891, and reached Shum the same afternoon, after crossing the low pass of Lanak and entering a plain in which Shum is located.

On the day following we crossed over another pass, elevated about 18,000 feet above sea-level; then crossing several streams we arrived at a place called Tobomorpo, situated in a plain. We next marched along a stream and through a plain to Kalung, situated to the south of a salt lake, a place where the wind always blows strongly. A little snow fell this day. Up to this place we experienced no want of grass, which was growing everywhere, but no fuel could be obtained here, and we were obliged to use *argol*, or the dried droppings of animals, for burning purposes.

Our next march on the 6th, through a sandy tract, took us in a north-easterly direction, to a very beautiful spot known as Pibok, which is situated near the Mangtza Cho (lake) and surrounded by very fine scenery. We here found a low dry shrub, called *lurche*, which we used as fuel. After halting on the 7th at Pibok, we marched on the day following to Khangmar, situated to the south of the Mangtza Cho (lake) and near a hot spring. We marched on the two succeeding days to Sammar and to Chorimar, the latter situated on the western shore of the Arport (Horpa) lake. On this last march we noticed that antelope abounded. On the 11th we skirted the shore of the above mentioned lake and camped to the south of it, at an elevation of about 18,020 feet, and then on the 12th after following an easterly bearing for some miles, we altered our direction to the south-east, to a place called Cholong.

Our next march took us over a pass elevated about 18,520 feet above sea-level, to Tagnek, a place situated near the north-western shore of the large lake of Charol or Shemen, where we found fuel very scarce and the wind blowing very high. On the 15th we travelled along the northern shore of the lake and camped at Chamit Charol, where we found plenty of grass. Next day to Khamba Toksa, where Captain Bower took observations for latitude, and on the day following we made a short march to Khambul, where for the first time on this side of the Lanak Pass, we saw nomad encampments, and engaged men as guides. From Khambul we marched to Rarapka situated near a small stream, and the next day, after ascending a comparatively easy pass, we encamped at Gakchi, situated at the foot of another pass, which we crossed the day after, the 20th July, and then followed on to Aru, near the western shore of a large lake called Aru, elevated about 17,100 feet above sea-level. At all these places water was plentiful and good, but wood for burning was scarce, and we had to resort to *argol* for fuel.

Our next march lay through an extensive grassy plain, on which a great variety of flowering plants seemed to flourish, and where the wild yak and numerous antelope roamed about freely, and we camped at a place called Arurapka, situated at the foot of snow mountains. On the following day, the 22nd, we journeyed due east, leaving the Aru lake and another smaller lake on either side of the route, to a pass which we ascended, and camped near, for the night. A tarn, containing a little dirty water, supplied our wants in this line, and we found *argol* for burning. A road leads off from this place towards Lhāsa.

On the 25th July, we reached a very fine spot, situated in a wide open valley, after having passed *en route* some lakes and a spring of water. During these last three marches we found plenty of water, but fuel was scarce. After a halt at the last camp, owing to a fall of snow, we continued our march in a south-easterly direction, camping in a wide valley on two successive nights, and after crossing a low watershed, we reached a spot at the foot of some hills where, in consequence of our baggage animals having strayed, we stopped till the 3rd August. During these marches fuel and water never failed us, but we were not a little inconvenienced by repeated falls of snow. Our elevation here was about 17,080 feet above sea-level. Several of our baggage animals were lost and we had to do the best we could without them. At this place Captain Bower took observations for latitude. On the 4th August we broke up camp and continuing in a south-easterly direction, we arrived at a spot near a stream which empties itself into a lake to the north-east, having camped mid-way on the previous night. We found the tract we had traversed to be a waterless one, but here we discovered water and a little green grass to cheer us, and the dry droppings of animals supplied us with fuel for burning. We halted here on the 6th to recover our baggage animals, which had again strayed away. Another long march on the 7th through a grassy valley, brought us to a spot near a stream which empties itself into the lake mentioned above. We were in much want of something to burn at this place and to add to our discomforts, a storm broke over our heads, and deluged our camp. Captain Bower observed for latitude here, which we ascertained to be in elevation about 16,080 feet.

Five marches, varying in length, on a south-easterly bearing, crossing two elevated passes and passing lakes on either side of our route, brought us to a spot in an open valley, where Captain Bower again observed for latitude on the 13th August. On these marches we found water and fuel plentiful, while there was no want of excitement afforded us in the pursuit of game, which abounds in this tract. Yaks, antelope and ducks were seen in large numbers. Traces of men were also noticed.

On the 17th August, after having made four additional marches, through low hills, over two passes, crossing streams and passing a few lakes, we reached a nameless spot in a plain, which we found by observations to be elevated about 16,650 feet; this also was a latitude station. Everywhere on these marches water was plentiful and there was fortunately no want of fuel. Leaving our last camp on the 18th we marched for five days over passes elevated above 17,000 feet, encamped near stream, passed lakes, and on the 22nd we stopped near a small lake where Captain Bower observed for latitude. On this tract we found water everywhere, and fuel was forthcoming in sufficient quantity for our wants. Here we had evidence of men having been before us. The elevation of this camp we found to be about 15,550 feet.

On the 23rd we made a short march, of about 6 miles, to a place near a small stream, where we found sufficient grass for our wants, but fuel was scarce. Here we halted the next day, because we heard that some Champa people were encamped in the neighbourhood, from whom we wanted information, regarding the country, etc. We were not well received by them however, their jealousy and suspicion having evidently been aroused.

On the 26th we came across a party of Dokpa people who were grazing their cattle, and they obligingly sold us *satu*, salt and sheep. These men wore big hats as a protection from the sun. On the day following, we made a very short march of about 4 miles, to a spot called Sira-Nagmo. Two marches more brought us to a place called Zita, situated near a stream, in a plain,

after having crossed a pretty considerable stream flowing northwards to a large lake called Tukteilukar, and said to have a circumference so large, as to occupy a man seven days in walking round. There was no want of grass in this track, but fuel was scarce. The elevation of Zita we found to be about 14,620 feet.

On the 30th August after crossing two low passes, we arrived at Ratha, a place situated on a small stream which empties itself into a lake to the south. Whilst we were camped here, a party of mounted Dokpas insolently addressed us, forbidding us to leave the spot, till orders were received from higher authority, concerning us. They were soon made aware that their instructions were not going to be complied with. The country we had now traversed, from the Lanak Pass, was treeless, though in places we found a dry bush called *burcha*, which we used whenever we could, as fuel, but *argol*, chiefly of the yak and antelope, we found in sufficient quantity to use as fuel. I do not remember seeing any birds throughout this tract, which is known as the Chang. Five marches of varying lengths, from Ratha, over passes, crossing minor streams, through valleys, and skirting lakes, brought us to a spot known as Sitong, where we camped; this was one of Captain Bower's latitude stations. Throughout these five marches, we received decided opposition from the Dokpas, who inhabit these parts, living in tents made of black wool. These men did all in their power, short of physical force, to dissuade us from travelling towards Lhāsa, where they sent men to inform the authorities of our approach. Sitong is situated near a stream that flows into the large lake, called Naktsong (Satu). Several hot sulphur springs exist in this locality, which is elevated about 15,520 feet above the level of the sea. Robbers roam about these parts.

Two more very long and fatiguing marches, skirting the southern shore of the Naktsong (Satu) and Garing (Cho) lakes, brought us to a place known as Gagalinchin, elevated about 15,560 feet. These two names, Naktsong (Satu) and Garing (Cho) are given to the western and eastern halves of one very large salt lake. It is said to be twelve days' march round it. We reached this place, Gagalinchin, on the 7th September, and owing to the determined opposition we received, it was agreed that we should stay here till orders were received from Lhāsa. Those orders came shortly and finally stopped the continuation of our march in the direction of Lhāsa, so we were obliged to abandon that project, and retracing our steps on the 4th October, we reached Lamakarmo on the 9th, a place situated on the route we had traversed. During our detention at Gagalinchin, we experienced falls of snow on several occasions. Lamakarmo, the place we reached on the 9th October, is near the south-west corner of the Chrgut Cho (lake) from whence we could see snow mountains, lying both to north as well as south. Here we stayed on the 11th and following day, to replenish our stock of provisions.

The next day we marched northwards, along the western shore of the Chrgut Cho (lake), to Uruni. A curious white rock, called Shamo Atsag Jamo (Shamo's helmet) stands clear out of the water of this lake, near Uruni. I may here explain that Shamo is traditionally said to be one of the ancient warriors of these people.

Our next three marches were in a northerly direction, to Moga Pishor, situated in an extensive plain, thence to Hormo at the foot of a pass, which we crossed, and then to a spot on a small stream which flows into the Chajing Cho (lake). In this tract we came across Champa encampments, for grass was growing luxuriantly everywhere. Pursuing still a northerly bearing, we camped on the 17th, at Taglagapo, passing *en route* two *manephans* or piles of stones, having the religious formula of the Tibetans, "*Om mane padmi om*," engraved on them. The next day we crossed a very high snow range at an elevation of about 18,760 feet, and descended to Mugatip, where we camped.

Leaving our last camping ground on the 19th we travelled on to Zokh, passing *en route* a very remarkable rock. We then pushed on through an extensive plain to Potocho, where we camped and halted the next day, owing to our baggage animals having strayed away over night. On the 22nd October we left Potocho and marched to Ten Kum Song, passing some lakes and several caves, which afford shelter, to travellers; and then on the day following we ascended a pass, and crossing, descended to Iringkhade, where we camped for the night. The next day we marched through a wide open valley or grassy plain to Kho-khung-chaka, elevated about 15,860 feet above sea-level, and almost entirely surrounded by very high snow mountains. Up to this place we had travelled almost due north from Lamakarmo, but now we were to pursue a due easterly bearing.

Our next eight marches were uneventful, and were one and all, in a due easterly direction from Kho-khung-chaka. At first we marched through a grassy plain to Shegarkhung Long, and then crossing a rather elevated pass, about 17,700 feet above sea-level, we camped at Shegar-shar Long, leaving a lake on our right hand. We then skirted the Tau Cho (lake), and halted for the night at Pading. The following morning we skirted another lake, then ascended a pass, and camped for the night, at Kong Thong. Pursuing our journey the next day, we traversed

a plain, crossed a pass, and camped for the night at Singi Opo. The following day we camped at Ghagasar, passing *en route* several small streams, which drain into a lake, and then marched to Yagmo and Nasu Zir, where Captain Bower took observations for latitude. In the neighbourhood of Yagmo there exists a rather large salt lake, around which herds of yaks graze, attracted no doubt by the salt licks, which are known to be in the locality. All the surrounding population carry away salt from the mines that exist near Yagmo, which is elevated about 16,110 feet above sea-level. Nasu Zir is surrounded by low hills. We never felt any want of grass for our animals throughout this tract of country, and we were fortunate enough to secure sufficient *argol* for burning purposes. It is evident that this has been a well known route, for on the top of the pass near Shegarkhung Long we observed a *manephane*, or pile of stones, with "*Om mane padmi om*" engraved on them.

On the 5th November we marched to Khurlu Mata, situated on a small stream, and on the following day we crossed a pass, and entering a wide valley, we camped on a stream flowing to the east. Many snow peaks were visible on this march. The next day we followed the same stream on which we last camped, passing on either hand, low red coloured hills. During the last three marches we felt no want of grass or *argol*.

Three marches more, after crossing several passes, and hearing of nomad encampments in the neighbourhood of our route, we arrived at a place called Bongro, elevated about 15,380 feet above sea-level, and where we learnt that bears were to be found. Grass on these marches is abundant. On the 15th November, after making four marches of varying lengths, we reached a place called Garthe, situated on a stream which flows into the Chonak Cho (lake). On these marches we crossed several passes and streams, and came across Dokpa encampments. We halted at Garthe on the 16th in order to purchase, if possible, some yaks for transport purposes.

On the 17th we made a rather long march, and on the 18th we reached Khokink, near which place there were Dokpa encampments. These Dokpas are subjects of China. On the 19th we marched to Data Cho and on the 20th we camped at Pongro, which is surrounded by hills, after passing several *manephanes*, or piles of stones. On the 21st after crossing a pass we arrived at Atak Memar, passing *en route*, Kozong and Sharuring, two places which were occupied by Dokpas. On the 22nd we reached Shathama Chichong. It was on this march that we crossed the route taken by Pandit Kishen Singh, when he travelled from Lhāsa to Saitu, during 1879-82. The elevation of Shathama Chichong is about 14,320 feet above sea-level.

Six additional marches, some of which were very long, took us to a place called Pongra, where Captain Bower observed for latitude. On these marches we ascended passes, crossed streams, saw many snow peaks around us, and encountered several Dokpa encampments and passed *manephanes*, but besides a fall or two of snow, no particular adventure occurred. We found the elevation of this place to be about 14,920 feet. After making a day's halt at Pongra, we made a long march to a place situated in the midst of hills, from where snow peaks were visible. Here we noticed forest of pine on the hills adjoining our route, as well as several nomad encampments. We learnt also of the existence of bears, jackals and pigeons in this locality.

On the 1st December, we made a short march to a place near Tsuk Sun Dong Gong Gumpa, or monastery, where two high officials, called Yong and Lama, respectively, reside. Here we found well built wooden, painted houses, and each house displaying a flag at the end of a long pine pole. Four important roads meet at Tsuk Sun Dong Gong, which contains about 500 houses and is evidently a place of some importance, from all that I could find out, and plays its part in the government of the surrounding country. Two marches more brought us to Nirchumgi sarai, where Captain Bower took observations for latitude.

On the 4th December we marched to Pongmar Thong, situated on the Ircho river, and on the 5th another march took us to Longorpo, after crossing numerous streams, and a pass elevated about 15,000 feet above sea-level. After a halt of a day at our last camp, we marched to Yangamdo, situated near the Ze Chu (river), passing several encampments. This place is under Chinese rule. Another long march, on the 8th, took us to the large village of Richanda, where we saw patches of cultivation. This place is about 13,220 feet above sea, and is situated at the foot of a small hill near the Thomcho river.

On the 9th December we made another long and very trying march to Batasumdo *sarai*, near a stream and surrounded by hills. We crossed several passes and streams on this march. Here again Captain Bower took observations, and from here many snow peaks were visible on all sides of our camp. On the 10th we halted at Batasumdo and on the day following, we marched to Malanzi, situated at the foot of a red coloured hill, near a stream, crossing the Ma La (pass) and several streams. Not many encampments existed on this march. On the 12th we journeyed to Vanzomda, near Sere-sumdo, situated on a stream which flows into the Su Chu (river), which latter is bridged. We noticed patches of cultivation, for wheat, barley and vegetables are what the people cultivate in this part of the country. A place called Chanba Gumpa lies a little lower down the Su Chu.

Our next march was to Jogar Thong, a latitude station. Several villages were passed *en route*. Here we halted on the 14th, owing to the desertion of our guides. The day following, we reached the large village of Trashiling Gompa, containing about 700 houses, and situated near a stream, which empties itself into the Chim Chu (river). We passed numerous habitations and the tract appears to have a pretty considerable population. The elevation of this place is about 12,820 feet.

On the 16th we made a very long march to Khemo Tinchin, situated on the Komcho river, where we found a large population, in a place containing about 500 houses. Wheat is cultivated in this locality. Our next march was a short one, to Khembo Nar, through a thickly populated tract, and on the following day, we resumed our route to Khembo Chahu. The inhabitants along this march are thievish by custom and impudent in manner. On the 19th we marched to Khemoyok, situated on a stream which flows into the Barazonchu river, and on the day following we reached Maru, the residence of a Lama, situated near a wooden bridge over the Tasichu river, and near a *manephane*, where Captain Bower took observations for latitude. The country on this march was well populated. We had warning given to us that this place was noted for thieves, and that they intended to rob us. In consequence of this warning, we prepared to receive them, but the night passed uneventfully. There are two religious sects amongst this people, one called Pandi and the other Ponbe.

Four more marches, after ascending several passes, crossing numerous streams and passing through pine forests, and a thickly populated country, brought us to Poshi Thong, situated on the Ze Chu (river) and in a valley surrounded by pine forests. On the last of these four marches we passed Kiuchi monastery, a place of considerable size and importance. In the forest we passed *en route*, musk-deer and pheasants are to be found. After halting one day at Poshi Thong, we made a very long march to Rocham Thang, situated on the Ze Chu (river). On this march we passed some iron mines. The elevation of this place is about 12,500 feet.

Four more marches of varying lengths, brought us to Guru, where we arrived on the 30th December. Several villages were passed, and at some of our halting places, the people asked us to show our passport. The Ze Chu (river), along which our first two marches ran, is bridged in several places. The hills on either side of our route were covered with forests of pine, including both the *longifolia* and *excelsa* species. Several officials approached Captain Bower at Guru, and asked us many questions regarding our intentions, and enquiring if we possessed a passport to travel in these parts. These men tried to intimidate us and attempted to prevent us from journeying onwards to Chiamdo, saying that no Englishman had travelled here before. The elevation of this place we found to be about 11,100 feet.

On the 31st December, we marched to a place called Epwa, situated a few miles beyond the city of Chiamdo, which latter is a centre of great importance. It is densely inhabited and possesses several fine *gompas* or temples. Chiamdo is situated at the junction of the Nomu river and a stream that flows from the west. At Epwa, Captain Bower took observations for latitude, and fixed its elevation at about 11,840 feet. We halted at Epwa on the 1st January 1892, and on the following day made a long march to Pandesar, in which there is a house set aside for the accommodation of Chinese officials travelling between China and Lhāsa. Barley and wheat are cultivated at this place. On this march we passed a pine forest. The elevation of Pandesar is about 12,720 feet. Six marches of varying lengths, some long and wearisome, through a well populated tract, brought us to Garing Doba, where Captain Bower took observations for latitude. This place is a part of the country where the people are independent of both China and Tibet. On these marches we ascended several passes and crossed numerous streams, and saw forests of pine on either side of our route. This part of the country is inhabited by Dokpas and Khatis, or a mixed race.

On the 14th January, after making five marches, we reached Gartok (or Ma-kham), a place previously visited by explorer Pandit Kishen Singh, and called by him Gartok (or Ma-kham), situated on the Mongothong Chu (river). On these marches we crossed several passes and met with numerous well populated villages. Pine forests were seen on the hills, on either side of our route. At certain intervals in this part of the country, there are houses set apart for the accommodation of Chinese officials, when travelling between Chiua and Lhāsa. We halted at Gartok (or Ma-kham) on the 15th January.

We next marched to a place called Pu-la, situated on the Mongothong Chu, and surrounded by hills covered with dense pine forests. Here we learnt that Prince Henry of Orleans and M. Bonvalot had travelled over this route. We were now at an elevation of about 12,420 feet. On the 17th, we reached Lande (Lhamdun of Pandit Kishen Singh), a pretty large place, inhabited by Khatis (a mixed race of Chinese and Tibetans). *En route* we crossed several passes, and skirted many villages and pine forests. Several snow peaks were visible hereabouts. Our next march was to Bon, a place situated at the foot of the Bomba La (pass), from whence



eastwards, the country is under the rule of China. Several villages were passed on this march, and the whole tract is thickly populated.

On the 22nd January, we reached Ba or Ba-tang, situated near the left bank of the Di Chu (river), after making four marches, first to Khonjika, then crossing the Di Chu by ferry boat to Tuana or Dubāna, then on to Lah and lastly to Ba-tang. Ba-tang possesses a big monastery or *gompa*, surrounded by a wall. The river Ba Chu, near which we camped, is spanned by a wooden bridge, and on the opposite side of the river, is a village. The population of Ba-tang is made up chiefly of Khatīs with a sprinkling of Dokpas.

I had an opportunity of witnessing how criminals were kept in confinement here. These poor creatures have instruments like the stocks applied to their necks. The people of the place told us, that about two years ago, two Frenchmen (M. Bonvalot and Prince Henry of Orleans) visited Ba-tang, and remained in the *sarai* two days. We saw the words "vive la France" written by one of them on the wall of the *sarai*. Horses are used here for ploughing the fields.

On the 25th January, we left Ba-tang and marched to a small village of 5 or 6 houses called Pongotomo (Pang-tha-mo Giachug of Pandit Kishen Singh), situated on the Ba Chu river, and near the foot of the Tag La (pass). A fine forest of pines exists in the locality. *En route* we noticed several snow peaks and passed many hot springs and a few small villages. Our next march was to Tāshu Giachug, after crossing the snow pass of Tag La. Tāshu contains 7 or 8 houses and a few nomad tents, and is a very cold place. We passed on either hand snow ranges and peaks, and also fantastically shaped, whitish hills, covered with forest. Elevation about 13,140 feet.

On the 27th, we marched to Rathi, a small village consisting of about 7 or 8 houses situated in a valley surrounded by hills. At first our route ran along the Tāshu Chu (river), and then left it, and after ascending the Lathok La (pass), we descended to our camping ground, from which some snow peaks were visible. Fine forests of pine exist on the hills bordering our route, from Ba-tang to this place; but the people of the country wantonly destroy the trees.

Another march of ordinary length brought us to Namda, (Nyenda of Pandit Kishen Singh), a small village elevated about 12,790 feet, from whence several snow peaks were visible. On this march we noticed only a few nomad tents, but numerous *manephanes*. The people here are very superstitious, and believe they can obtain the salvation of their souls, by marching round the snow ranges that exist in this part of the country.

Three marches more, after crossing several passes and streams, brought us to Li-tang monastery, a place of considerable importance and inhabited by Khatīs and Dokpas. It is situated on a stream flowing through a valley and is surrounded by hills. As we arrived at Li-tang, some men approached us with stones in their hands, evidently bent on mischief; but as a counter move, Captain Bower took up his gun; on seeing which the cowards fled. Li-tang possesses a *kotwali* or *kacheri*.

Our next march was to a small village called Hapchukha (Ho-chu-ka), after crossing the Damado La (pass) and passing some places where the inhabitants dig for gold. A crude method of washing the gold is adopted. On the 2nd February, we marched to Thamo Rothang (Tāmārāthong of Pandit Kishen Singh), a very cold place, elevated about 12,980 feet above sea-level, and surrounded by forest. *En route* we crossed two passes, and passed some houses and a few nomad encampments. All the way from Li-tang the cold was intense. Our next march was to Golok (Golokthok Giachug of Pandit Kishen Singh), a large place and well inhabited. Throughout this march, we observed forests on either side of our route. On the 4th, we marched to Lanipa, a small place, situated at the foot of the Dosa La (pass). We passed a *gompa* or temple *en route*. Forests extend the whole way. Leaving Lanipa, we marched on the day following, to the right bank of the Nāg Chu (river). On the opposite bank (which is reached by a bridge of boats) stands the village of Nāgchukha, where Pandit Kishen Singh, had observed for latitude. After crossing the Rama La (pass) we made a very great descent to the Nāg Chu (river), and found the place very warm. The whole way from the pass our route ran along a stream, and on either side, the hills were covered with dense forest. We saw, for the first time in our travels, monkeys and squirrels at this place.

Our next march on the 6th, took us to Urong Dongu (Urong Dongu Giachug of Pandit Kishen Singh), a rather large place, and then on the 7th, we reached Mina Golok (Golokthok Giachug of Pandit Kishen Singh), situated near a stream and densely populated. On this march we crossed the Kaashi La (pass) from where we saw several snow peaks on all sides of us. Two French missionaries live here, but they were not at home when we arrived. They reached at first at Ba-tang, but about three years ago they left that place for Mina Golok. Our next camp was at Amia To, or Amia Giachug (Anyā Giachug of Pandit Kishen Singh).—*To* means a house, and *Giachug*, a place. This is a large place and thickly populated. Snow fell during the night. We passed many villages on this march.

On the 9th February, we crossed over the Zila La, or Gi Pass and camped at a small place called Che-to. The spot is a beautiful one, and is surrounded by hills covered with forest. On the top of the Gi Pass I met a French missionary, travelling to Mina Golok, and he put me questions ; asking if I spoke English and where I came from. After a little talk, we parted.

On the 10th February, we marched into Ta Chen Lu, which is known also as Tarsedo, or Gia Tentsi. It is situated in a valley surrounded by very high mountains, and is entirely under the rule of China. It has the reputation of being unhealthy, and we concluded that this was due to the existence of a cemetery on the hill above the city, near which is a spring of water (used by the people for drinking) which flows down to the river. The people keep their houses clean and comfortable, and use chairs and tables, and are, as a rule, civil and obliging. Ta-chien-lu is a large trading city, and is a large mart for tea, in which commodity a brisk trade is carried on. The houses here are almost all built of timber. We halted here, up to the 24th February, and almost every day of our stay we experienced falls of snow.

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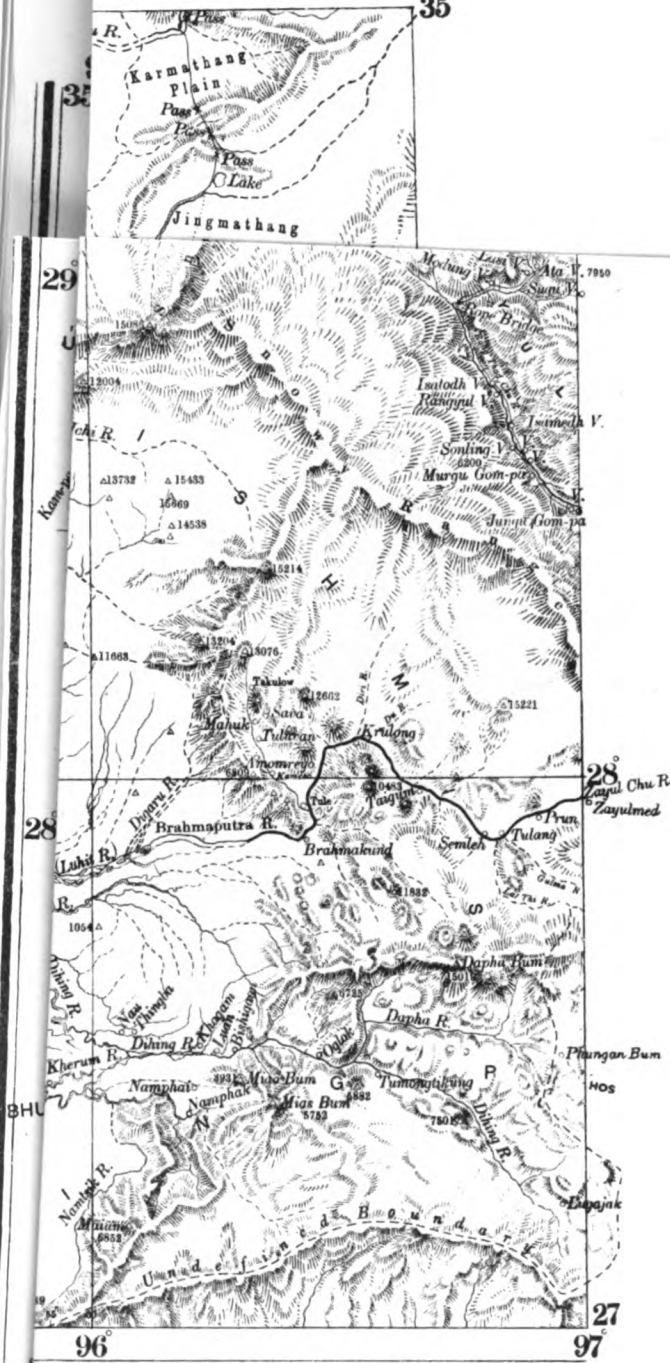






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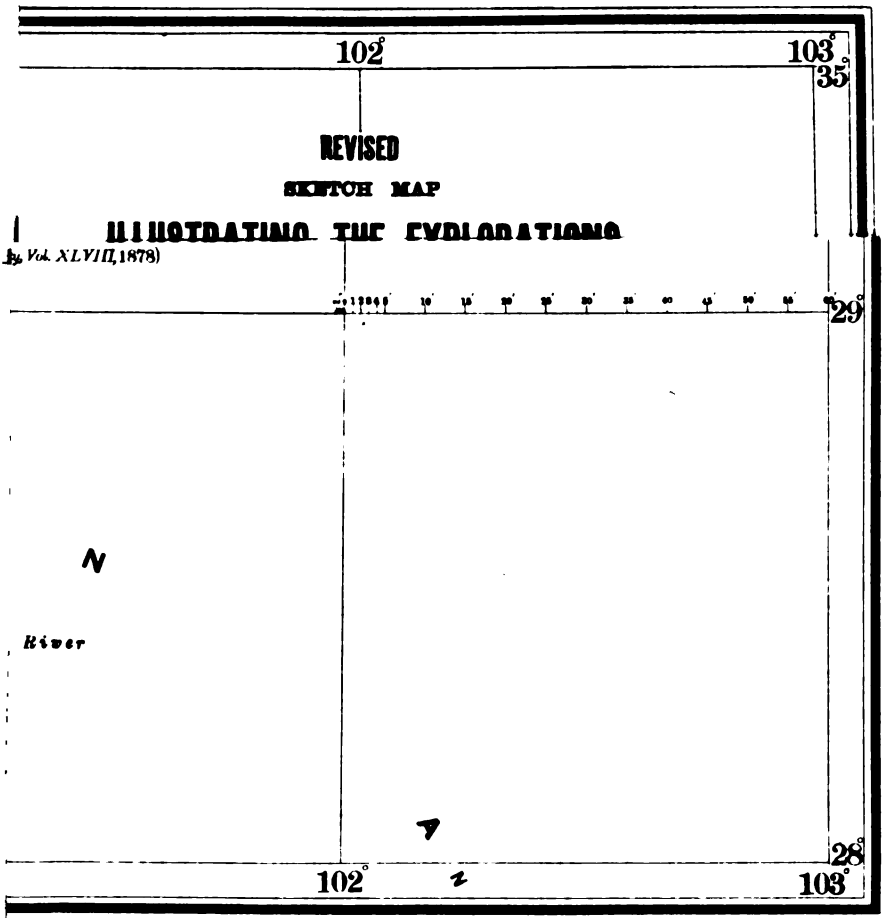


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No. XV



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A. Ki. Route in 1879-82

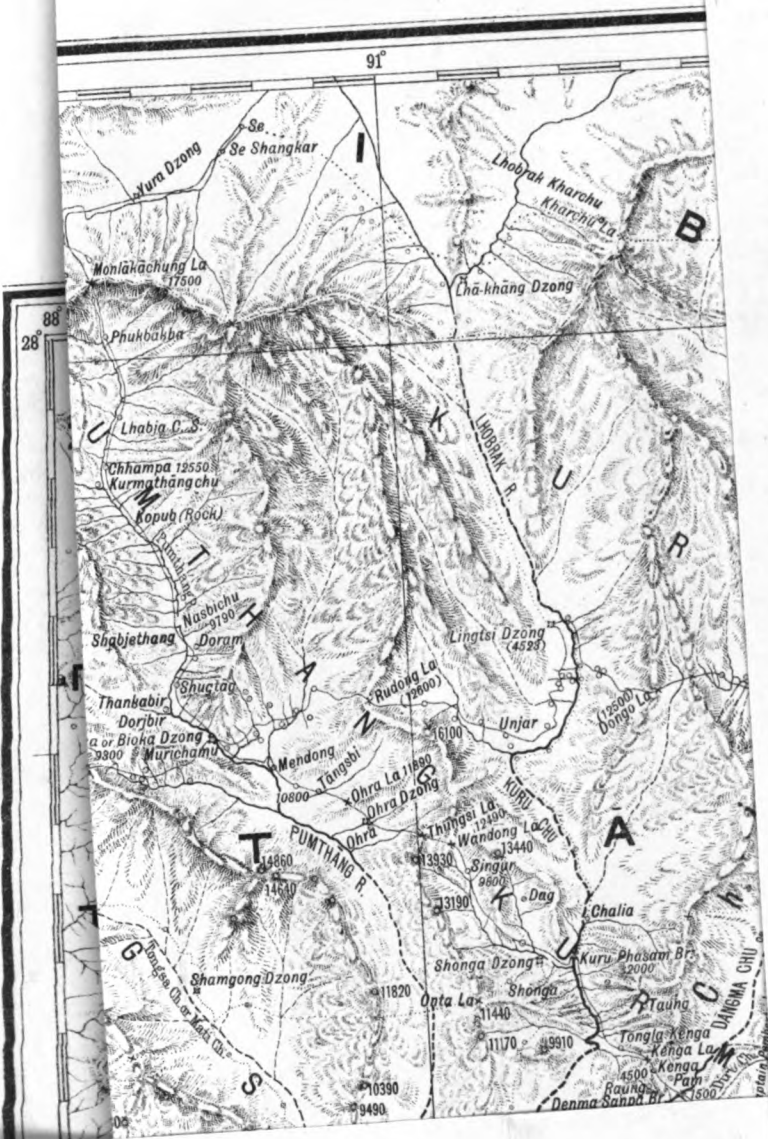
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OF THE TSANG-PO  
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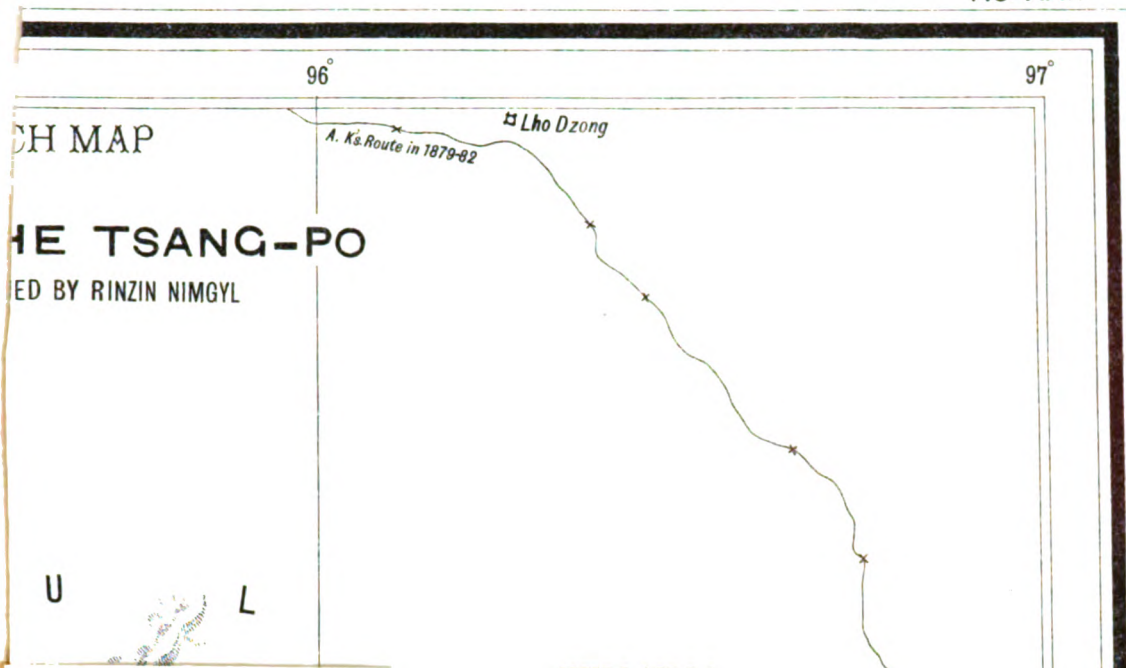




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SKETCH MAP  
ILLUSTRATING THE ROUTE  
OF  
ATMA RAM IN COMPANY WITH  
IN  
TIBET AND WESTERN  
IN  
1891-92  
Sheet No. 1

Scale: 1 inch = 39 Miles or 63,000 Feet

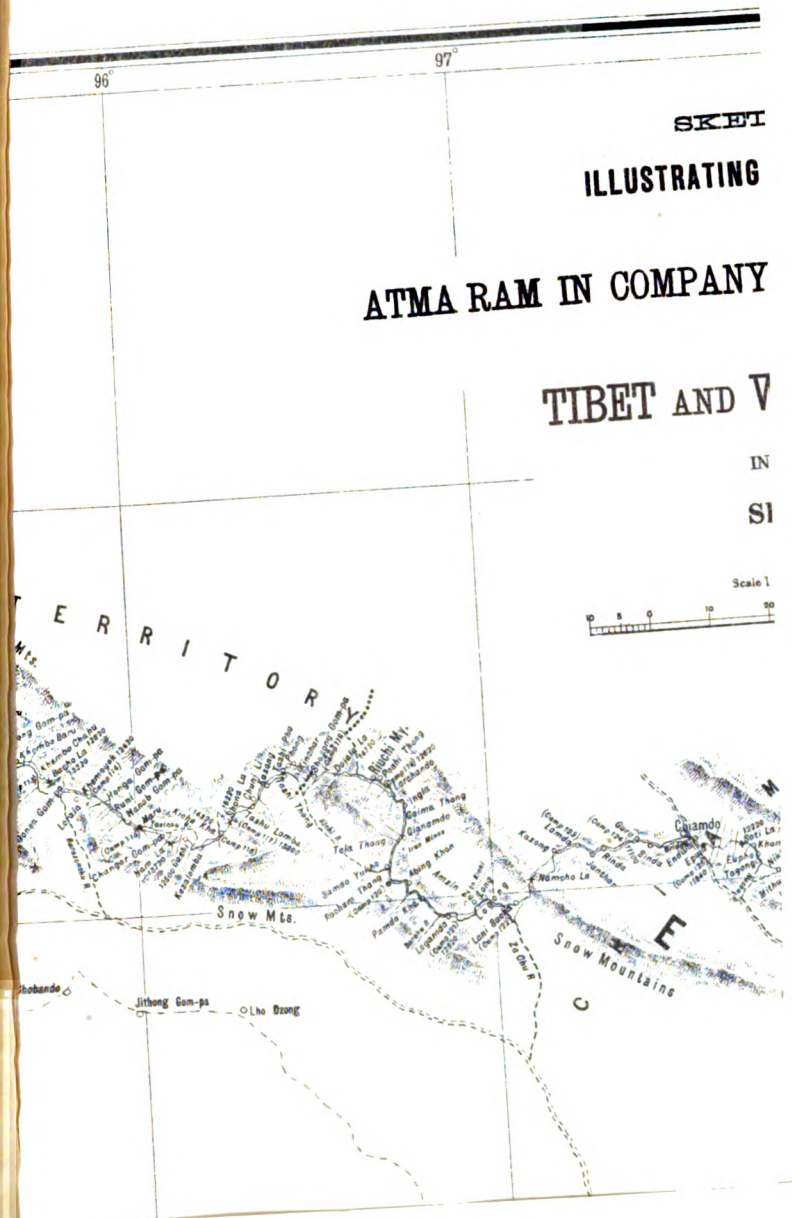
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